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THE

EDINBURGH MEDICAL AND SURGICAL JOURNAL:

EXHIBITING

A CONCISE VIEW

OF THE

LATEST AND MOST IMPORTANT DISCOVERIES

IN

MEDICINE, SURGERY, AND PHARMACY.

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THE

EDINBURGH
MEDICAL AND SURGICAL JOURNAL,

No. XCVI.

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2. A Compendium of the Diseases of the Human Eye, containing Descriptions and Explanations of the Various Diseases, illustrated by Engravings, and accompanied by Practical Observations on their Treatment. By ALEXANDER WATSON, Fellow of the Royal College of Surgeons, Edinburgh, &c. &c. &c.

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Morborum Definitiones Causæque continentes, &c. &c. quibus accedit Toxicologia. Auctore R. M. Hawley, M. D. Collegii Regii Medicorum Edinensis Socio, necnon Societatis Regiæ Medicæ Edinensis Socio Extraordinario. Edinburgi, Guthrie et Tait; Londini, Longman et Soc. 1827.

Physiological Illustrations of the Organ of Hearing; more particularly of the secretion of cerumen, and its effects in rendering auditory perception accurate and acute; with further remarks on the Treatment of diminution of Hearing, arising from unperfect sensation, &c. being a sequel to the Guide, and to the Illustrations of Acoustic Surgery. By Thomas Buchanan, C. M. Member of the University of Glasgow; Member of the Wernerian Nat. Hist. Society, Edinburgh, &c. &c. &c. London, 1828, large 8vo.

A Practical Treatise on the Typhus or Adynamic Fever. By John Burne, M. D. Licentiate of the Royal College of Physicians of London, &c. &c. &c. London, 1828, 8vo.

Observations on Cow-pox, and on the necessity of adopting legislative measures for enforcing vaccination, in a Letter to Mr Thomas Brown, Surgeon, Musselburgh, containing remarks on his "Letter to the Right Hon. the Earl of Liverpool, concerning the present state of Vaccination." By Henry Edmonston, A. M. Surgeon, Newcastle-upon-Tyne. London and Newcastle, 1828, 8vo.

Academical Examinations on the Practice of Surgery, intended for the use of Students. By W. Gordon, Member of the Royal College of Surgeons, Edinburgh. Edinburgh, 1828, 12mo.

A Memoir on some recent discoveries relative to the Functions of the Nervous System. By F. Magendie. Translated from the French. London, 1828, 18mo.

On Tendency to Disease of Body and Mind in Refined Life, and the general Principles of Cure. By Leonard Stewart, M. D. Licentiate of the Royal College of Physicians. London, 1828, 18mo.

An Essay on Medical Education. By Thomas Hodgkin, M. D. One of the Presidents of the Society of Guy's Hospital, &c. London, 1828, 12mo.

A Blast from the North, in Vindication of the Medical Graduates of Edinburgh, against the invidious and calumnious Aspersions cast upon their Literary and Professional Education, through the Bye Laws of the London College of Physicians. By a Medical Graduate of Edinburgh. London, 1828. 8vo.

A Letter addressed to the Faculty of Physic in London, on the illegal and unwholesome Bye-Laws of the College of Physicians of London, establishing a Monopoly in favour of the Graduates of Oxford and Cambridge. By Henry Robertson, M. D. of the University of Edinburgh. London, 1827, 8vo.

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The Philadelphia Monthly Journal of Medicine and Surgery. Edited by N. R. Smith, M. D. Professor of Anatomy in Jefferson College, &c. &c. Philadelphia, 1827. Nos. 2, 3, 4, 5, and 6, of Vol. I. and Nos. 1 and 2 of Vol. II. Phil. 1828.

The American Medical Recorder, conducted by James Webster, M. D. Lecturer on Anatomy and Surgery, Caleb B. Matthews. M. D. and Isaac Remington, M. D. assisted by an Association of Physicians in Philadelphia, New-York, Baltimore, and Norfolk, No. 41. Philadelphia, 1828.

The American Journal of the Medical Sciences, No. II. February 1828. Philadelphia, Carey, Lea, and Carey, Chestnut-Street; London, John Miller, 40, Pall Mall; Paris, J. B. Bailliere, Rue de l'Ecole de Medicine. 1828.

The North American Medical and Surgical Journal. Published by the Kappa Lambda Association of the United States. No. IX. January 1828. Philadelphia, published quarterly by J. Dobson, Agent, 108, Chestnut-Street. 1828.

The Medico-Chirurgical Review and Journal of Practical Medicine, half monthly and quarterly. Edited by James Johnson, M. D., Physician to the Duke of Clarence. New series, No. 16, Second Number for 1828.

An Investigation of the Properties of the Thames Water. By William Lambe, M. D. Fellow of the Royal College of Physicians. London, 1828, 8vo.

A Dissertation on the Nature and Properties of the Malvern Water, and an Inquiry into the Causes and Treatment of Scrofulous Diseases and Consumption; together with some remarks upon the influence of the Terrestrial Radiation of Caloric upon Local Salubrity. By William Addison, Surgeon. London, 1828, 8vo.

THE

EDINBURGH
MEDICAL AND SURGICAL JOURNAL.

1. JULY 1828.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*On the Sanguineous Tumour of the Female Breast.*

By JOHN RODMAN, M. D., Paisley.

THE disease which forms the subject of the present paper is one in which the medical profession must be much interested. Peculiar apparently to the female breast, it assumes a very anomalous character. From its locality it may be referred, according to Cullen's Nosology, to the class LOCALES ; and from certain circumstances to be mentioned in its history, it may be thought to rank in the order *Tumores.* But it presents several peculiarities in its morbid structure and general history which entirely exclude it from a legitimate place with any genus or species otherwise distinguished in this arrangement.

Neither am I aware of any other mode of classification yet proposed in which it can be satisfactorily included. Even the attempts made to refer it to the class of encysted tumours, *(tumeurs enkystées, loupes, cystides)*, the contents of which are surrounded by a bag or cyst, have been found insufficient for embracing it, encysted as it is, from difficulties which will fully yet appear. To Mr Abernethy's method the same difficulties apply ; so that the principle of arranging tumours from their anatomical structure is in this instance inadmissible.

The usual seat of this disease in the female breast, and its resemblance to several of the malignant affections incident to that gland, must make it always be viewed with a suspicious eye. This difficulty in distinguishing its nature is augmented by the uncertainty of the principles on which its treatment has been hitherto conducted, and renders it of the utmost importance to the practitioner to determine what method of management is most likely to be, if not favourable, at all events least injurious. The opportunities which I have enjoyed of observing its disposition and character in different stages of progress, and some experience in its treatment, have led me to pay attention to its peculiarities; and it is with the hope of contributing to the alleviation of a malady accompanied not only with bodily pain, but much mental anxiety, that the following observations are now communicated to the profession.

The first distinct examples of this malady were published by Dr Monro Primus in the fifth volume of the Edinburgh Medical Essays and Observations, under the title of "Histories of Collections of Bloody Lymph in Cancerous Breasts," with the reason for giving them publicity, namely, "no mention being generally made by chirurgical writers of a collection of bloody lymph in the breasts of women, as a consequence or attendant of the scirrhous tumours of those glandular parts."

His second and third cases were of middle age, the first was about fifty, and the last about thirty-seven. In the first case, the tumour on the exterior of the breast was large; in the second, it was increased to a great bulk; the third, increased considerably; and the breast of the fourth was of itself very large. Of the first, the tumour was hard and unequal. The patient of the second had been two years sensible of a hard tumour. The whole breast of the third seemed to be scirrhous; and that of the fourth was hard. The discharge from the first and second was bloody water, from the third blackish-red lymph, and the fourth bloody lymph. The first broke after the use of cataplasms; the second was opened, and another incision made next day; the third and fourth were opened with a very small lancet. The breast in the fourth case was amputated; and that of the second was after death dissected, and found to be an empty bag without any tumefied gland in it. Three died, and one was abandoned as hopeless.

The physical characters of the tumour varied a good deal. The second case had turgid cutaneous veins and cuticular redness; the third very large and varicose veins, the integuments at last turning red; the fourth had varicose veins of the skin, and the nipple shrunk out of sight; and, with respect to painful sensations, the first and fourth cases had sharp, the third pricking, the second lancinating pain, in the last more violent after being opened, with supervening gangrene.

The inferences which these cases suggest I shall consider afterwards. Meanwhile, the analogy of Richter's case, (Observ.

Chirurg. Fasc. 3; also Trans. by Spence,) and of one by Mr James Briggs, Edinburgh, with the cases recorded by Dr Monro, is such as to render it proper to insert them ere entering upon the proposed considerations.

Richter commences by stating, that " a lively healthy woman, 60 years of age, with a good appetite and digestion, used formerly to observe at the time of her menses a hemorrhage from the mammæ. She had never had children. After the cessation of the menstrual flux, the hemorrhage from the breasts still continued for a time, only it did not appear so regularly at certain periods as before.

" But at last another phenomenon made its appearance without any particular cause. The whole breast began to swell, and finally increased to a great size. It did not feel hard, but elastic, and equally so in every part. Fluctuation was nowhere to be felt. With regard to scirrhus, of which I had been so much afraid, I was now perfectly at ease. Neither was the breast upon the whole painful.

" At last a place at the side of the nipple became very prominent, tense, and red, which, however, was not in the least painful, and after a while threatened to burst of itself. I opened it with a lancet. To my great astonishment not a drop of purulent matter appeared, but only a great quantity of blood, partly coagulated, partly fluid, partly black, and partly pure red.

" As, on account of the great quantity of blood, some of which was apparently fresh, the great age of the patient, and surprise occasioned by the unexpected sight of the blood, I had reason to fear a syncope, and great debility, I stopt the discharge, and covered the wound.

" For four days I removed the bandage twice a-day, and each time a quantity of blood of the above description issued out. After this the discharge changed to a reddish watery ichor. The preternatural swelling of the breast was now gone. The scirrhus had remained unchanged during the whole process.

" The ichorous discharge continued for six weeks; but at last it became more purulent, and the scirrhus gradually lessened, till at the end of that time it was entirely gone.

" The abscess then gradually contracted, and at last turned into a small, narrow, shallow fistula, which remained open many years, indeed as long as the patient lived. It generally discharged only a small quantity of ichorous fluid, but sometimes a considerable quantity of pure blood.

" As the woman with this discharge felt herself otherwise well, and as I was afraid that an evacuation to which she had been accustomed for so many years could not be stopt without danger, I had not the courage to attempt any thing decisive in order to obtain a complete cure."

Mr Briggs' case of sanguineous tumour of the breast, which is dated 1810, occurred in a single woman, aged 45, and extended from near the nipple towards the axilla; was stated by her to have eighteen months before originated like a small moveable kernel under the skin; and was sometimes painful on the arm pressing upon it during sleep. Fluctuation perceived for three weeks.

Being punctured, four ounces of dark and inodorous bloody fluid abounding with serum, and not coagulating spontaneously, were discharged. Repeated discharges of blood by the orifice bursting open at intervals for thirty-one days, and becoming more frequent and profuse, induced her to submit to the removal by excision of the diseased part; and in about six weeks from the time of the operation the parts were perfectly healed. This woman continued in apparently good health for eight years afterwards without any appearance of relapse of the local complaint, and died of sudden illness in 1818.

" In the centre of the tumour, when examined, a cavity was found capable of holding three or four ounces of fluid. The inner surface presented a number of rugæ or irregular folds, not unlike those of the corrugated inner surface of the bladder, or the auricles of the heart, forming small interstitial cells or foveolæ communicating with the principal cavity. The entire parietes of the cavity, which were about one-third of an inch in thickness, as well as the small cells formed in the sides of it, were found to consist of depositions of successive layers of coagulable lymph. A small portion of the glandular part of the breast had undergone some change in its texture, but had no communication with the cavity before-mentioned; and the change probably arose from pressure, in consequence of its contiguity with the principal diseased part."

The similarity of the principal phenomena in these two cases and the four preceding them will entitle us to consider them as one and the same disease. That there is an appearance of diversity in some of the collateral circumstances, however, will not be denied. This appearance, therefore, lest it lead indirectly to any difference of opinion, renders a fuller investigation of the disease, and more extended acquaintance with its general characters indispensable. This purpose I shall endeavour to accomplish, first, by laying before the reader several cases of the disease; and, secondly, by attempting a general description of its progress and phenomena.

Case 1st, An unmarried lady, near the age of 60, at a distance from me of more than eighty miles, while she was amusing herself in the garden, placed her foot upon the iron head of a garden hoe, by which the small transverse wooden handle struck her on the left breast. This happened in the summer of 1813. The pain at the time was sharp, but moderate, subsiding in the course of a quarter of an hour. She soon banished it from her mind, and thought no more of the subject till the following December, when she discovered unexpectedly some hardness in the body of the breast. Next morning a physician of extensive experience, who was consulted, ordered a leech and Goulard embrocations, considering it of little consequence.

I saw her for the first time in 1817. The tumour was fully an inch and a-half in diameter, and had attained what I shall afterwards distinguish as the third stage. She had enjoyed a vigorous constitution, and possessed a lively, acute, and active mind, with very superior information; but her general health was greatly impaired. The history given me of the second stage did not precisely correspond with that which is related in this paper. A considerable variety of external means, by different advices, had been employed with a view to suppuration.

For a long time in the first stage there was no pain, and little or no sensible increase of swelling in the part. It was only within the last six or eight months that she had at times been distressed with the suspicion that the disease was cancer.

My first object was the restoration of her general health, which seemed of the greatest importance. For that purpose, better regimen and a more methodical and steady attention to due exercise in the country were prescribed. Besides attending to these prescriptions, she was directed from time to time to persevere in the use of tonics from the mineral and vegetable kingdoms, especially the former, or those of a chalybeate nature variously prepared; likewise carefully to watch over the alvine dejections, and to use appropriate aperients more regularly, in order to rouse the excretory functions from a state of habitual and neglected inactivity.

For the tumefaction of the breast various instructions were at different periods requisite. The liniments were diversified according to circumstances, in different degrees of strength, in different proportions of camphor, or camphor and opium, and similar remedies, with which, in the directions transmitted, they were frequently compounded. Moderate pressure, by means of thin sheet-lead properly applied and retained by bandages, was also from the first recommended, in consequence of many years' experience that this was occasionally useful in certain varieties of mammary tumours.

This lady recovered her health and strength considerably, and for nearly two years the disease neither gained ground, nor seemed to differ materially from its state at my first inspection. I saw her last in April 1819.

A little prior to this, while enjoying herself with some friends, she received from extraordinary and very active exertions an injury, which caused the tumour so speedily to increase in bulk, that before I could see her it had burst, and was discharging its bloody contents. Her medical friend expecting, as in some abscesses, to accelerate reunion, enlarged the sore by incision. In this, however, he was disappointed; for after employing divers judicious means he failed to excite the healing process; and the patient gradually sinking from the continued discharge of the open sinuous cavity, died about eighteeen months after, without any painful or distressing sufferings, as I was informed, beyond the exhausting effects which accompany protracted ulceration.

Case 2*d*, While a widow lady, distinguished for literary talent, was alighting from a carriage soon after the summer of 1816, the hand of the servant, while assisting her, pressed incidentally upon the right breast. The pressure occasioned a degree of uneasiness for some hours. She was at this time about fifty.

My attendance commenced in July of the subsequent year, when the disease was advancing to the latter periods of the first stage. She was subject to dyspepsia. The treatment was similar to what is mentioned in the preceding case; and till the middle of 1822, the disease, in place of making progress, appeared by the means that were employed to be rather receding, and gave no pain; nay, almost no trouble.

At this time, in consequence of falling from a horse, the clavicle of the same side was fractured. From this injury she recovered in the usual time, no direct impression upon the breast having been perceived. Yet it felt more tender, more sensitive, and more easily affected after this accident.

By the end of March 1824 the tumour was so much enlarged, that its central diameter was equal to two inches and a half. She now came to reside in my neighbourhood, and for the first time I emptied it of its dark grumous, bloody, and variegated contents, by introducing in a lateral direction an instrument resembling the couching needle. The aperture uniting and soon closing up, I kept it open by introducing night and morning the sharpened point of a silver probe for twelve days successively, during which the cyst contracted, and the integuments had become in feeling and appearance almost natural. In this way I was able to remark that the discharge varied on different days, and at different periods of the same day; being sometimes thick, clotty, and dark coloured blood, sometimes oily, yellow, and watery, like serum, according to the corporeal exertions of the patient.

She returned home, and without enjoying, as formerly, the opportunities of attending to the necessary treatment. I had occasion from the reaccumulation of the fluid contents afterwards to pierce and evacuate the tumour four times, twice in May of the same year, once in June, and once in August. At three of these times it appeared to me proper to treat the complaint on the principles of treating hydrocele,—by emptying the sac, and then injecting port wine by the small or narrow aperture. The first time the wine was scarcely equal to the quantity of water that was mixed with it, for I feared the possibility of high inflammation; but neither pain of any consequence nor inflammation ensued. The second time the quantity of wine was equal to that of the water, and the third time it was a third more. The pain excited by this injection was such for a little as to occasion a short nervous paroxysm; and the local inflammation was more obvious than ever before, but by no means excessive.

Five weeks after this the cyst felt contracted like a small moveable body somewhat of a fleshy firmness, so that hopes were entertained that a cure was effected. Yet the fluid again collecting about the close of that year, I committed the case to the care of another practitioner, by whom, in February 1825, the breast was extirpated.

It was filled at the time, as he informed me, with the usual contents; and on inspecting the amputated breast, the fluid was discovered in two large cavities, having capsules or cysts exceedingly thin and delicate. It appeared during the operation that there was but little remaining of the glandular part; and with this was mixed a small portion of pus, not unlike that of a strumous nature. The structure of its body was formed chiefly of adipose and cellular substance—there were no varicose or distended blood-vessels, or scirrhous tumours, but six separate spheroidal bodies of the size of garden peas, filled with limpid fluid, with some appearances of a spongy nature nowise redder than the adjacent parts.

The lady has now been nearly two years in good health.

Case 3d, The third case is that of a lady, the mother of a numerous and healthy family, herself peculiarly active, and favoured with an uncommon share of excellent health.

Her attention was first directed to the examination of the right breast, by observing appearances, time after time, of blood upon the linens. At length she discovered it issuing from the nipple; and in the course of some months perceived extending from its base a firmness of substance.

I saw her not long after this in May 1819, when her age exceeded 76. No distinct or insulated tumour was then perceptible. The body of the breast was well-formed and of good bulk; atlantal and dextral to the base of the nipple there was circumscribed tumefaction of some degree of firmness, accompanied with scarcely any uneasy sensation. The nipple indeed had been frequently very tender, tumid, and painful; and when most painful, it was seemingly sufficient in its inflamed and irritable state to account for this adjacent swelling, which was invariably then most considerable. It seems not unlikely, from several circumstances, that the nipple and anterior of the breast at some former period sustained external injury, of which she retained no accurate recollection.

The disease was only in its commencement, or merging into the first stage.

The morbid state of the nipple and adjacent parts became for a long time the main object of medical treatment. This embraced preventive as well as curative means, to the proper comprehension of which it is only necessary to state, that whenever she was affected by exposure to cold, which not unfrequently revived pains of a rheumatic kind of the same side, the nipple became disposed to the discharge of blood, appeared inflamed and tumid, feeling sore and tender, especially if, as often happened, the bowels were at the same time more than ordinarily constipated. The regulation of diet, of exercise, of temperature, and the exhibition of appropriate laxatives—neither drastic, however, nor mercurial—besides the topical applications enumerated in former pages, were therefore most obviously requisite, and, in conjunction with strict care in the mode of dressing, were attended with very happy effects.

Such was the tardy nature of the disease under this treatment that it was not till a short while previously to October 1822 that it attained the second stage; and the third stage was only so far advanced in April 1824, as, after some objections and hesitations on the part of the patient, rendered it necessary to urge her to have the tumour pierced, its central diameter being about two inches.

This I effected in the same manner, and by the same instrument, as related in the case preceding. The discharge consisted of dissolved blood free from any fœtor, of a glutinous clammy nature and dark-brown colour, with oleaginous globules on the surface—no pure blood.

After discharging the contents frequently, as in the history of the above-mentioned case, for three weeks, the wound, which generally closed in a few hours, being for some days united, the parts having assumed a very natural appearance, and she being without pain or other complaints, except from the tenderness of the nipple, nothing more than precautionary treatment was farther required for thirteen months.

About the conclusion of that period the sac was again filling; for some time previously another tumour, small, yet similar, had made its appearance on the opposite side of the breast. I found it therefore necessary to pierce the sac a second time in May 1825, when, as in the case before referred to, I also had recourse to an injection of equal parts of wine and water; but without exciting either the pain or the inflammation which was wanted.

It was on the 13th of May these steps were taken; and yet there was no abatement of bloody effusion within the sac from this period till the 12th of the ensuing December. On the 15th of May, I was obliged again to commence the process of drilling with the probe, as lately noticed, in order to open the tender aperture, and evacuate the dark-coloured venous blood with which the sac was distended. Indeed, so frequently was this process afterwards required, that I was under the necessity of performing it eighty-three times by the day of December above stated; so that, by calculating the bloody and serous discharge at the average of three ounces each time, although its quantity was often greater, the amount of the whole for these seven months is believed not to be much short of twenty-one pounds, or nearly three gallons.

The weather of the latter date was particularly damp, cold, and chilly. Her apartment had been suffered to become unusually cold during the night; and she was suddenly attacked with rigors, and subsequently with fever of a rheumatic tendency, which increased for three days, and was only subdued at the end of a week.

In less than two days the whole breast became swelled and inflamed; and as the sac continued to fill, I was obliged to have recourse again to repeated perforation with the probe. For three days at first the discharge was a mixture of blood and pus, but almost ever afterwards it was wholly purulent. The evacuation of this matter always relieved the local disease, and therefore I continued the use of the probe in opening the same aperture for that purpose, night and morning, nearly six weeks, the quantity of matter discharged towards the end becoming less and less.

In the beginning of the following February, seldom did any kind of discharge take place from the use of the probe; for its use was persisted in till the breast was thoroughly healed. During the continuance of the purulent, as well as the sanguineous discharges, every possible means were used to support the patient's strength. This was accomplished by prescribing variations of palatable and nutritious diet, as well as frequently repeated, but moderate doses of vinous or spirituous liquors diluted, along with various preparations of cinchona.

Her health was now so completely restored, that the breast having assumed its natural and full appearance, without ulceration, she was able for four months to go about pretty freely, to ride in a carriage, and even in a considerable degree to employ herself in several active occupations.

Early in the following summer, she was once more attacked with fever of the rheumatic type, from which she recovered; then towards the end of August with a species of cholera.

Although she recovered from the main symptoms of this last disease, her strength was so exhausted by it, that she was afterwards in great measure confined to bed. Great debility was her chief complaint; and on the 24th of September of the same year, 1826, she suddenly and unexpectedly expired, having passed her eighty-fourth year, and lived nearly nine years from the commencement of the breast complaint.

Case 4th. It may not be improper merely to advert to another case of encysted tumour in a lady of about thirty, and a constitution more than commonly vigorous. When I first saw her she had observed the tumour of the right breast, then nearly an inch in diameter, above fourteen months. All the symptoms indicative of its merging upon the third stage were very manifest. Her youth, health, and vigour appeared favourable, however, to the hope of promoting suppuration. This was accomplished by employing the usually internal means of invigoration, and external suppurative remedies for seven weeks, during the greater part of which she was persuaded to remain for that purpose mostly in bed. At the conclusion of that period the part was opened, and I had the happiness of seeing it healed up in little more than the usual time.

From all the circumstances in the survey of the four cases of Dr Monro, it is natural to ask, Is each of the discordant symptoms to be considered as necessary to constitute the specific character of the disease? Part of the morbid results no doubt succeed the mode in which some of the cases were treated.

Although the tumefaction be considerable, its precise magnitude is uncertain; and this peculiarity is another perhaps of the instances of the imperfection of every classification of tumours which has made its appearance. It is only when a cyst has been formed in the mamma, which contains a fluid partaking less or more of sanguineous constituents, along with other circumstances applicable to the disease, that the tumour can be regarded as that collection of bloody lymph in the female breast, which distinguishes the disease under consideration.

It is observed by Mr Benjamin Bell, that "It is not what a tumour may eventually become, but what it is on its first appearance, that can admit of any description." Yet the tumour of which we are speaking is one which must be an exception to such a rule. Its first appearance, when compared with that of encysted tumours generally, would on no account justify the conclusion, that, at a future period, it will become an encysted tumour containing nothing but fluids of a bloody consistence.

It is only necessary, in proof of the difficulty of concluding from first appearances, or symptoms most obvious at the commencement, to refer again to the cases Dr Monro has recorded. In the first case there was a large tumour; in the second the tumour had gradually increased to a great bulk; and in the fourth case, when the Doctor first saw the patient, the breast was very large. But the tumour in the first case was not only large, it was likewise very hard and unequal; the second was also hard; the third, from a small hard tubercle, proceeded, ere fluctuation was perceived, till the whole breast seemed scirrhous; and from a small red tumour in the fourth case, the breast in which he felt fluctuation was large and hard.

I must mention, however, that in no case which has come under my observation has there been a hardness such as that which seems to have been discovered in these cases. In no instance was there ever any kind of tumour which, strictly speaking, was entitled to the denomination *scirrhus;* or which had any thing resembling the firm whitish bands, such as are described by Dr Baillie in his Morbid Anatomy. Neither have I at any time or stage of the complaint been able to perceive in the tumefied part any of the circumstances which Mr Abernethy considers necessary to characterize carcinoma, and to distinguish it from other sarcomatous tumours. Nor does it seem compatible with the laws of the animal processes, that a portion of mammary substance, hardened into genuine scirrhus, and completely disorganized, should of itself melt down, and become a sac filled with inodorous, mild bloody fluids.

The contents are often variable both in constituent parts and in consistence. At one time the tumour contains a dark-coloured, grumous, thick, and tenacious bloody matter, which has no doubt given rise to the denomination sanguineous. At another time, the proportion of serum is so considerable as greatly to alter the character of the whole in consistence and fluidity, and to entitle it to the appellation sero-sanguineous. Again, there is frequently little, nay, often none of the colouring matter of blood, the serum being almost the alone constituent, thin and attenuated, from the great deficiency in the relative proportion of albumen. These variations, as has been noticed, are not to be found in different cases only, but also often in the same cases at different times; and even at different times of the same day in some instances,—the discharge in the morning being bloody, thick, and grumous,—and in the evening attenuated serum, having scarcely the tinge of blood; and *vice versa*. From the contents of the tumour, therefore, it is impossible to draw any essential character.

The contents of the tumour are liable to considerable change in the progress of the disease. This change I have observed to occur, first, from the nature and kind of the external applications used; secondly, from the degree and kind of exertions in which the patient engaged; thirdly, from the temperature of the season and circumstances of exposure; and lastly, under various degrees of healthy and distempered conditions of the general system. These changes form instructive indications, by which the means of cure were indicated.

It is of some importance to advert to the local injury which the parts sustain, from the effect of long-continued and increasing distension. Without entering minutely into the consideration of the manner in which such violence is known to disturb the sound organization of the integuments, so as to induce increased morbid disposition, and destroy the tendency to the process of reunion, we may acquiesce with Mr James in the remark, " that too little is known of inflammation of cysts of chronic abscesses, or diseased action which causes the formation of such cysts, and the secretion of the fluids which distend them, to speak with confidence upon the subject." But, while all this is granted, who can deny the pernicious results of excessive distension in the cases of encysted tumour to which we are now alluding? Independently of every other consideration, the eye of experience, and what is usually termed common sense, cannot be blind to the baneful consequences.

It may indeed be asked, what, then, is to be done in such a case? If I am correct, I believe it is an observation of Mr Hunter's, that, while in genuine abscesses the suppurative inflammation diminishes from the moment they are opened, on the contrary, the opening of encysted tumours is frequently the commencement of high inflammation. Resting, therefore, upon the authority of one, to whose observations the highest value is attached, practitioners may be deterred from opening tumours such as those under consideration. Whether this has been the case; whether practitioners have often been swayed in former times by a like opinion, or continue still under its influence in treating the tumour we are now considering, may be left as matter of future inquiry. The main point at present is, have any proofs appeared from the few cases on record of any good being effected by allowing the contents of the tumour to become very abundant,—to accumulate till it burst spontaneously? And have we not the strongest reason for suspecting that Mr Hunter's view may have arisen, either from some inadvertence in the mode of opening them, or from some mistake in the time of opening them, when we know that encysted tumours are daily opened now with impunity?

The observations I have had an opportunity of making during the progress of the cases detailed above induce me to divide the disease into three stages,—first, That stage which is distinguishable by a certain kind of almost general swelling and disturbance of the mammary organ, previously to the actual formation of any distinct or insulated tumour; secondly, the stage during which a distinct and permanent tumour can be readily ascertained; and, thirdly, that in which the tumour may without hesitation be pronounced to contain an accumulating fluid.

By thus dividing the progress of the disease into three stages, the description will accord with the natural order of morbid phenomena as they occur, the history will be rendered more intelligible, and the matter treated of will be more thoroughly comprehended in all its bearings. In tracing the history of the disease on these principles, I avoid all reference to the term cancer, as I conceive no proof of its alliance with that malady has been yet adduced.

First, then, the disease commences with a gradual and moderate swelling of the mamma, not altogether unlike that periodical fulness and distension which, in delicate females, so regularly recurs in it, from what is called the sympathy or periodical influence between the breast and the uterine system. If all things be duly considered, however, there will be little difficulty in distinguishing the one swelling from the other, when it is known that in every instance the supervention of the former is always more speedy or sudden than that of the latter swelling, sensibly more considerable, attended with sensations of a nature more uneasy and stationary, more acute, and consequently upon the whole more troublesome.

It ought at the same time to be carefully distinguished from every kind of inflammatory and acute active swelling, to which the breast is so much disposed from morbid impressions in general. This also may be found a matter of little difficulty; for continued sharp pain, distressing tension, inflammatory redness, great heat, or throbbing, or feverish accessions, are symptoms of morbid activity with which it has never, so far as I have witnessed it, been accompanied.

But that it is a swelling which arises from a certain disturbance of the local functions will probably be granted from this consideration, that its immediate cause is often external injury of the parts. In two of the cases with which I have been concerned, its origin was traced either to a bruise from a certain degree of temporary pressure that was nowise violent, or to sudden collision with a solid, though not very hard or heavy body. None of the cases, it is necessary always to keep in mind, exhibited a disposition to any thing like a painful or severe affection. They were of such a mild nature, that the effects were more correctly entitled to the character of occasional uneasiness, than to that of very troublesome or distressing feelings; a circumstance which not only regards the time of infliction, but even the state subsequently, and appears to be one that may be viewed as almost peculiar to this disease.

Hence, if it be admitted that Carmichael Smith, Pinel, and Bichat, in the arrangement proposed by them, on the principle of referring to the elementary tissues certain morbid processes included under the general idea of inflammation, intended likewise to comprehend the modified process of functional disturbance which has just been noticed, as the result of a particular kind of external injury, there will possibly be less objection to my considering this process as a species of chronic inflammation, peculiar in such circumstances to the cellular tissue of the female breast. Perhaps, on this admission, the hardness of tumour recorded in Dr Monro's cases may be accounted for, by allowing that the primary or subsequent affection may have been accompanied, at particular times, by a kind of inflammatory operation, whose action, allowing that it was modified, and of a mitigated nature in general, was at these times deeper and more extended than in the cases which have come under my observation.

My reason for this supposition is, that during the first stage of the disease of which we are speaking, there will, for a short while, occasionally be observed, as if it were deep in the substance of the breast, a gradual approach towards a superficial firmness, resembling in some degree that which occurs from recent and temporary renewals of mild or chronic inflammation, and extending more or less considerably; and it is a symptom indicative of this stage being nearly terminated whenever the firmness begins very easily and with more than usual frequency to make its appearance. But it seldom remains more than a few days at a time in that state of approaching firmness, the circumference of the firmness by degrees subsiding, till all the continuous parts yield a feeling of softness on examining them, which, by a cursory examination, might be pronounced sufficiently natural. In the centre, however, may soon be felt something of a similar firmness, greatly reduced in size, of irregular dimensions, and figure; and this eventually diminishing, and as it were melting into a characteristic shape, can be ascertained, in the course of time, as a permanent, insulated, and small but not hard tumour; settled in the spot precisely where, by pressing gently with the finger at the commencement of the disease, it may often be discovered to differ from the parts around it, in being tender or slightly painful.

This, then, is about the time or period I have been disposed to regard as marking the introduction of the second stage. How long the first stage may indeed continue cannot be exactly stated. The symptoms by which it is distinguished may continue for two, three, or six months; sometimes near to or beyond twelve months, during which, as will naturally be expected, they are liable, after subsiding, to be occasionally again roused by new occurrences.

The second stage having commenced, and the tumour being distinctly discovered, it is felt as a small conical or oval body, neither so detached, as to roll easily under the finger, and yet so loose as, in lateral directions, to be easily moveable. In these circumstances, it may readily be distinguished by a circumscribed pulpiness, and a kind of soft doughy elastic firmness, with a peculiar smoothness of circular and compressible exterior. It is altogether free from much preternatural heat; there is no inflammatory redness of the cuticle, and in the parts immediately around there is a dulness of pain, and often a notable obtuseness of feeling. Its uniform ovoid figure is a striking contrast to the generic character of encysted tumour, which is said to be irregular and always varying in its form.

While the form, the mobility, the uniformity, and the sensations of the tumour in this stage are peculiar, its situation also merits attention. In the usual description of encysted tumours one of their characteristics is, that, being formed in the cellular membrane, they are to be felt immediately underneath the common integuments; a description undoubtedly leading to the expectation of feeling them almost in direct contact with the epidermis. In the state of the tumour alluded to at present this is not to be expected. For although it may be traced as in the cellular texture, and consequently not so deep as ordinary mammary tumours, still it feels deeper and more distant than the description above would indicate. It is somewhat superficial, and is felt at the same time as if a little softness of substance intervened between it and the skin, which moves over it with a certain degree of sliding motion, affording one more criterion by which, in connection with the other circumstances already mentioned, the nature of the disease may not unfrequently be ascertained with a considerable degree of accuracy.

The circumstances which have been just related are considered as symptomatic of the second stage. But, like the former, it is impossible to define the period during which this stage continues. The actual growth or increase of its size may be scarcely perceptible for years, or circumstances may occur by which it is obvious in a few months. It deserves to be remembered, however, that at times there appears to be an enlargement when there is actually none. At these times there is an appearance of its having acquired an increased solidity of texture; and yet, some time afterwards, it will be found to have returned to its former dimensions, and to have resumed its characteristic of circumscribed softness and pulpy feeling, while the surrounding parts have again become softened. When a change is thus effected, it recovers its loose and detached state, so that, from being in adherence somewhat firmly to the integuments, it may be again freely moved by the finger as fomerly. Alterations of this nature are induced by various external causes, and consequently the disposition to grow is accelerated or retarded according to the frequency of their recurrence; which at once must be seen to render its duration indeterminate. It happened in one instance that the temporary appearances of increased disease came on a short time after a fall, even although the breast, so far as it could be ascertained, had at the time sustained no direct external injury.

It is now that the third stage is ushered in; not merely by the increasing bulk of the circular tumour, but by the progressive accumulation of fluids within the embryo cyst. But there may be some difficulty in acquiring a distinct knowledge of this latter circumstance, previously to the cyst attaining the diameter of half an inch, or three-quarters of an inch. The reason of that difficulty seems to be an irregular thickness of the encompassing coat; for sometimes it feels as if there were either an increased quantity or an increased bulk of soft substance intervening between it and the finger, while at other times that intervening bulk is not perceived, which irregularity renders the sensations communicated by the contents very different on different examinations. This tendency to the thickening of the parts, however, gradually disappears; and hence, in the course of time, the accumulating fluid can be satisfactorily observed as well as the slenderness of the cyst's structure.

The state of the tumour as to the actual accumulation having become sufficiently manifest, it might be supposed that the future augmentation of bulk would be rapid and regular; but this is not always the case. It often proceeds as slowly and as irregularly in this respect as we have noticed it to have done in all its previous conditions. But the irregularity of this process is much more remarkable before the tumour attains a certain magnitude than afterwards,—an observation of great practical moment; for in proportion to its bulkiness, so is its tendency to rapid accumulation and consequent distension of the integuments. This circumstance was strikingly verified in one of my cases, from there being two tumours of the same nature in the superior portion of the same breast. The one tumour was about an inch distant from the other, without any communication, so far as various attempts to ascertain that point could be trusted. The one was also much smaller, being much later in appearing than the other; which afforded opportunities of acquiring information both as to that circumstance and as to several others of considerable importance.

The only important change in the character of the tumour, then, after the third stage has fully commenced, (waiving those considerations which relate to the effects of distension, either in causing a varicose appearance of cutaneous veins, or other local morbid impressions,) is the distressing bulk the tumour may attain from the increased quantity of sanguineous or fluid contents.

On the formation of the cyst little is accurately known.—The opinions of Bichat, (Anatomie Générale) who refers the formation of encysted tumours generally to laws analogous to those which regulate the growth of organized parts, appear, if literally applied, scarcely compatible with the circumstances of the formation of the membranous envelope in question, which is the product, not of salutary, but of morbid processes. But, not to enter into the various discussions upon this point, it seems probable that the cyst under consideration is not a new production in the part, but originally formed from extravasated fluids, collecting in one or more cells of the cellular membrane, along with an increasing tendency to accumulation. If this be the case, it seems not unreasonable to believe, that, with the increase of collected fluids, there may be a progressive dilatation and extension of its coats, which, by deriving accessions of compacted tissue from the adjacent cells and those in close contact, may thus acquire whatever is necessary for extension and strength. The objection that the neighbouring cellular membrane does not disappear or diminish in every instance, whilst the sac acquires a large bulk, is, if the animal operations during disease be duly considered, of very little importance.

The second consideration relative to the cyst regards its texture; and here it is proper to mention, that in the cases I have at one time or other had the opportunity of examining carefully, at an advanced period of the third stage, the cyst was almost invariably slender, with little vascularity, and little or no attachment to the surrounding parts. The uniformity of slender texture was not alike perceivable, however, on external examination, at every period of this stage. Sometimes it felt as if a little thicker, tenser, and firmer than it did at other times; and yet this circumstance may be easily accounted for, by remembering what has been already stated;—namely, that the disease commences with a swelling, moderate, yet more or less extended; and that during the first and second stages symptoms of temporary disturbance of the vascular functions are not unfrequent, resembling chronic inflammation, and appearing in great measure to be confined to the cellular tissue, although varying both in the force of its activity and in the sphere of its operation. When the tendency to these affections is roused in this third stage by an incident unusual, yet so slight as almost to pass unnoticed, the vascularity is re-excited, the parts affected, and the texture for a short time altered, as above remarked.

The third or remaining particular is the hemorrhagic process—that defect of integrity of the vessels in consequence of which the sanguineous congestion in the cyst is effected. In speaking of this, however, it is necessary to remember, that what is to be attempted with a view to illustration will refer to the third stage of the tumour principally and during the latter periods of tumefaction. If it is not likely that the effusion proceeds immediately from arteries, it must be admitted to issue from veins. Let us, therefore, see if this opinion be sanctioned by anything like demonstration from practical experience.

In the first place, then, it will be allowed that veins may be so diseased as not only to cause an essential derangement of their functions, but also an obvious and very considerable dilatation of their coats or calibre. To account for this it is presumed none will be disposed to object to the belief, that, in some instances at least, the dilatation ensues from the loss of that tone in the tunics or walls which is necessary to their healthy condition; and it will scarcely be affirmed that in all instances the varicose state of veins is brought on solely by the loss of the necessary support of the adjacent parts, however possible it is that such a loss must add to the general effect. The possibility of the loss of tone being therefore admitted, we may more easily account for the effusion of bloody matter within the sac, on the principle of open mouths of venous branches, which are more diseased at one time than at another, and more or less at these times in a weakened and relaxed state.

That the effusion may partly depend upon an increased *vis a tergo*, brought on by an increase of disease, is not unlikely; yet the possibility of additional causes removes not the possibility of the main cause, namely, the deficiency of healthy tone in those vascular branches which are immediately concerned with the diseased parts.

This may be farther explained by an observation which any one in such cases may make, and which I have had occasion to make in several instances. When, by means of a small aperture, made by introducing an instrument similar to the couching needle, I was under the necessity of emptying the sac of its contents repeatedly, it frequently happened, if the patient confined herself at these times to bed for a few days, or avoided the usual bodily exertions for a little afterwards, that the discharge, on soon again introducing the same instrument, had become much thinner, having less and less of the red matter of blood, and more serum, varying in proportion to the degree of rest.

So much was this the case, that the discharge at times was altogether without the colouring part, and not unfrequently near the transparency of limpid water; and even although it was limpid one day, the alteration the day following might be striking, from the patient in the interval taking a short airing in a carriage; the red matter being not merely augmented in quantity, but the fluid greatly more consistent and thickened, the breast at the same time having invariably less or more the appearance of new disease. Hence it seems perfectly obvious, whether venous trunks, branches, or capillaries be said to open into the sac, that the diameter of their calibre is influenced by morbific impressions, permitting them to pour out the grosser or finer parts of the circulating fluid; and hence also such occurrences seem to afford a pretty sure mark, that nône of the vessels thus affected, under the like circumstances, can be very large.

It is not improper to mention, that, in Mr Briggs' case already referred to, which, in consequence of Scarpa's observations on the same disease, was published in 1822, a large venous trunk was exposed during the operation for extirpating the breast, immediately below the edge of the pectoral muscle. It bled profusely, and was considered as the source from which the tumour had originated, although the mode of communication could not be demonstrated by any opening in the sac. In one of the cases given above, nothing worth notice could be traced on carefully inspecting the amputated breast, except a few scattered bodies, not unlike pretty large beads, which, from their limpid appearance, have been generally denominated incipient hydatids.

I should now proceed to investigate the most rational and proper methods of treatment applicable to this disorder. From the statements already made several practical inferences naturally result. On these it is unnecessary to dwell long; and I shall, therefore, conclude with a few brief remarks.

In the first place, it is obvious, that, previously to proposing any plan of local treatment, the stage of the disease ought distinctly to be determined. The stages differ so materially from each other in certain particulars, that what may be proposed for one, may be wholly inapplicable to another. A moderate degree of topical pressure by proper bandaging proves highly beneficial, for instance, in the second and third stages, but less so in the first stage. The repeated evacuation of the contents, when the tumour is very bulky, and the sac is much distended, in order to prepare for other modes of treatment, is in great measure only applicable to certain periods of the third stage. The appropriation of medicinal means to the nature and circumstances of each stage tends to simplify the choice of remedies, and becomes a matter of no small importance.

Farther, if by piercing occasionally at an advanced period of the disease, the contraction of the sac is not only encouraged, and the growth arrested, but the integuments prevented from assuming that morbid disposition which excessive and increasing distension is sure to induce, while the subjacent parts are relieved from the pressure by which morbid operations are excited, little argument is required to prove the salutary effects from piercing as early in the third stage as circumstances permit. By doing so, the probability of success by vinous or other injections is greatly strengthened.

Again, the deleterious effects of incisions in the third stage, or openings of the sac with a lancet, and the safety with which, along with measures of subsequent precaution, the sac may repeatedly be pierced by a puncturing instrument, as described in the cases, it is hoped, are facts satisfactorily established.

Still farther, when it is considered that the disease originates in the vascular, but not the glandular part of the breast, many difficulties in the course of treatment will speedily vanish. To extirpate the embryo cyst or sac about the termination of the second stage would be a process attended with very little difficulty ; and to speak of amputating the gland in advanced cases generally is almost superfluous ; for, as the disease advances, the glandular substance seems at last disposed to disappear spontaneously.

To conclude. As a bad state of general health tends to influence every local disease, it is indispensable to use every means of improving the former. Sedulous management of the process of digestion, which should be conducted in such a manner as to nourish without oppressing, is the great object to be kept in view.

Paisley, 24th February 1828.

ART. II.—*Cases of Tetanus.* By EDWARD LEAH, Assistant-Surgeon of H. M. S. Albion.

THE following cases of tetanus occurred on board H. M. S. Albion after the action of Navarino. In one it succeeded a gun-shot wound on the seventh day, and proved fatal with great rapidity, although the system was brought effectually under the action of two remedies, which are more relied on by surgeons than any other in this dreadful disease. In the next, the spasmodic affection began at a much later period, having been produced by amputation at the shoulder-joint, which was rendered necessary by a severe cannon-shot wound. In this case the spasms never attained a great height, and although the treatment was chiefly confined to the moderate use of opium and a careful attention to diet, regimen, and the general state of health, the patient recovered.

CASE I.—John Key, seaman, was wounded, October 20th, 1827, by a musket-ball, through the left arm, a little above the centre, the shot entering a little posterior to the vessels and nerves, without injuring the bone. Little or no blood flowed after the accident. He came into the cock-pit immediately, having received his wound from a Turkish frigate which was boarded about that time, namely, 15 or 20 minutes from the commencement of the action. On his coming into the cock-pit the wound was immediately examined, when there being no hemorrhage, cases demanding our more immediate care were first attended to. As soon as time would permit he was examined more minutely, when the wound, being found to be a flesh one, simple dressings and a roller were applied. Next day, as he felt tolerably easy, the dressings were not removed. An opiate was given at night. 22d. The wound was dressed, and is looking well; sympathetic fever rather high. Bowels opened by medicine. The opiate was repeated. 23d. Passed a good night; arm feels comfortable; bowels free. 24th. The wound was again dressed; edges healthy; discharge rather thin. A piece of the tendon of one of the heads of the *triceps* hanging from the wound was cut away. Passed a tolerable night; general health pretty good. 25th. Passed again a quiet night; bowels regular. His diet has consisted principally of a daily portion of weak mutton-broth, and the usual allowance of wine was stopped. From the situation in which the ships were placed subsequent to the battle, every thing being in readiness for a renewal of it, and the men and officers lying at their quarters every night, it was impossible to make any final arrangements for the wounded until we quitted the Port of Navarino, which we did to-day a little after noon. 26th. The wound continues to do well; discharge rather thicker. This morning he was put into a cot in the sick birth, being previously obliged to sleep in a hammock in the cock-pit.

27th. 6 A. M.—He awoke this morning after a quiet night, complaining of stiff-neck, and inability to open his mouth, excepting in a very slight degree. The wound was immediately examined, and found to be discharging freely, and to have a perfectly healthy appearance. 8 A. M. Salts taken at six have had no effect. The muscles of the abdomen are now quite tense, and feel as hard as a board. The belly was ordered to be fomented frequently with hot water; a linseed poultice to be applied to the wound; and the angles of the jaw to be rubbed frequently with equal parts of spirits of camphor and laudanum. He was also ordered ten grains of calomel every other hour, a drachm of laudanum immediately, and half a drachm every other hour afterwards. This was continued up to six P. M. without any improvement. The bowels have not been acted on; his breath and gums give evident signs of the mercury having already taken effect on his constitution. There is such a copious secretion of viscid phlegm, that it is with the greatest difficulty he can swallow a tea-spoonful or two of barley water at a time, which is poured into his mouth with the assistance of an iron tablespoon fixed between his teeth. The spasms of the muscles of the neck and abdomen are violent, drawing the head forward on the chest, and approximating the latter to the pelvis. Neither the superior nor inferior extremities are at all affected. When he took the last dose of calomel there was so much of the viscid phlegm, that I believe the whole of the calomel was spit out with it, and the exertion of taking the medicine brought on the spasms. It was therefore thought advisable to desist from giving him any more calomel. He has been constantly asleep during the day, except when roused by the spasms or to take his medicine. Perspiration very profuse; pulse quick and small; he has frequent desire to make water, but has not been able to pass any. On pressing the region of the bladder there was found to be little or no urine secreted. 28th. The laudanum was continued till four this morning, but the symptoms gradually advanced to a fatal termination, which took place at half-past four A. M., being about twenty-two hours from his making the first complaint of spasm. He retained his senses to the last. I regret to say that no examination of the body took place, the part of the ship appropriated for this purpose being crowded with the wounded.

From my want of experience in this disease, I forbear to make many remarks; but from the nature of the wound, no part of great importance being injured, and considering further the favourable season of the year in which it occurred, one would not certainly have anticipated so fatal a result.* It accords with the statements of authors who have so frequently attributed this appalling disease to apparently slight injuries, and particularly injuries of tendinous parts.

Case II. October 20, 1828.—Mr Gray, midshipman, aged 16, of a dark complexion, short for his age, but of a robust constitution, had his right arm shot away by a cannon-shot, excepting a small piece of muscle by which it hung. He was brought into the cock-pit immediately after. The hemorrhage was not profuse. He was in the highest state of excitement, and was calling out as he descended into the cock-pit, "Doctor, I have lost one of my flippers." The shot had struck the arm about four inches below the shoulder joint, the inside of the bone being bared for about two inches, the muscles detached from it by the violence of the shock, and the extremity of the bone slightly shattered. It was thought by the surgeon of the ship, Dr R. P. Hillyar, that—after sawing off the bared rough extremity of the bone, and tying the humeral artery, (considering the shot passed obliquely,)—there was plenty of muscle on the outside of the arm, so that, by bringing the soft parts into apposition with adhesive straps and a roller, union might take place, and a useful stump might be formed. This was accordingly done, and he was put into a cot in the cock-pit as soon as the firing had ceased. No medicine was ordered; in fact, the night was spent before we had finished our operations and attended to the numerous wounded.

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* The range of the thermometer from October 20th to the 27th, from 8 A. M. to 8 P. M., was from 68° to 76°.

21st.—Passed a restless night, which is not to be wondered at, there has been so much duty going on all night, in repairing damages and getting the ship in order. He feels occasionally a good deal of pain, and the pulse is above 100, but the fever moderate. At bed-time he was ordered half-a drachm of laudanum. 22d. Having got a more comfortable bed, he passed a tolerable night and slept some hours. Complains very much of pain in the stump; and on the dressings being removed, the whole extremity of the stump is found to be a raw surface, the integuments not having taken on the adhesive process, but rather the suppurative; pulse hard and quick; tongue white. The anodyne was repeated at bed-time. 23d. Passed a quiet night, but he is very much agitated occasionally, which is not to be wondered at, considering the noise and bustle in the ship. Bowels have been opened by sulphate of magnesia. The anodyne was again ordered at night. 24th. Passed a good night. The stump was dressed; no prospect of adhesion, but, on the contrary, there is a very copious suppuration from the lacerated parts, and sloughing has commenced; in fact there is not the slightest adhesion in any part. The anodyne was directed to be continued. 25th. To-day the combined squadron left Navarino, and we were enabled to procure a more comfortable and airy situation for the wounded than the cock-pit, which was as full as we could hang the cots and hammocks. Mr Gray had a part of Captain Ommaney's cabin, nearly the whole of whose accommodations were most humanely given up for the use of the sick. Our patient had passed a tolerable night. In consequence of the unfavourable appearance of the wound, Dr Hillyar determined to remove the limb at the shoulder-joint. The operation was performed with a catline. An incision was made along the inner edge of the deltoid from its origin, as low as the injured parts would allow, which was nearly to its insertion;—a corresponding incision was then made on the outer edge of the muscle, and these two were united by a third across the top of the cone formed by them. The muscle was then dissected back and the joint opened. The head of the bone was tilted upwards a little from the glenoid cavity, and then by one stroke of the catline the limb was removed. There was not so much flap saved from the deltoid as was necessary, on account of the inner edge of that muscle being lacerated; more, therefore, was saved from the axilla than is usual, in order to cover the glenoid cavity. The axillary and two smaller arteries were tied. Not more than two ounces of blood was lost in the operation, the pressure which was made on the subclavian above the clavicle having completely commanded the hemorrhage. The flap was then brought over the glenoid cavity, and the edges were kept in apposition by three sutures, adhesive straps, pledget, and roller. He bore the operation very well, and expressed great satisfaction that it had been performed. In the evening he felt tranquil, and the pulse was 110. The anodyne was again given at bed-time.

26th.—Passed a quiet night, and is on the whole as well as can be expected. Oozing from the stump; skin moist; bowels not open; constant dozing. Anodyne repeated at night. 27th. Had again a good night. Skin cool; pulse 90; tongue white; bowels freely opened by medicine. There is a copious discharge through the dressings. Anodyne repeated. 28th. Dressed the wound; discharge healthy, and not very copious; edges of the wound very healthy; fever moderate; pulse 95; tongue loaded; bowels free. Diet hitherto vegetable. Anodyne repeated. 29th. Tongue rather less furred; discharge oozing through the dressings; hectic flush of countenance; is almost always dozing, but quite collected when spoken to; pulse 120; skin hot; bowels not open. 30th. Had a quiet night. The wound was again dressed. Discharge healthy; edges of the wound healthy, but without adhesion; little or no collection of matter under the flap; skin cooler; pulse 100, and steady; bowels relieved by medicine; spirits good as usual. Anodyne was repeated. 31st. He had a little wandering of intellect last night, and got out of bed in the absence of the nurse, but did not injure himself. I think it was the effect of the laudanum. On the whole, he had a tolerable night; pulse 90, and becoming firmer; feels very comfortable; bowels open; tongue continues white; wound discharges freely. To-day he was allowed mutton soup. Anodyne continued. November 1. Passed a good night; wound again dressed; granulations healthy, and there is a copious discharge of healthy pus; two ligatures and two sutures came away; the remaining ligature is on the axillary artery; bowels confined; skin moist; pulse 105. 2d. Pulse as yesterday; tongue clean; wound easy. He was ordered a saline laxative, and the anodyne again at night. 3d. He had a tolerable night; pulse quick; wound dressed; it looks very well, and the discharge is moderate and healthy; the lower part of the flap is not united, and the pus from the glenoid cavity flows through this opening; the ligature on the axillary artery came away. The same day we arrived at Malta, when Mr Gray and eighteen of our worst cases were landed at a temporary hospital in Fort Ricaroli. 4th. He bore the removal very well, and passed a good night without opium; pulse about 100; bowels open; he is a little excited to-day by the change of scene. He is allowed half diet, namely, a pound of bread, half-a pound of meat for soup, and half-a pint of milk daily. The wounded are still under the care of the surgeons of their respective ships.

5th.—Hitherto his progress was as favourable as could have been expected. He slept the whole of last night without an opiate, and when he awoke felt quite easy. At half-past six thought he felt a trickling down his back, which turned out to be hemorrhage from the wound. I saw him a few minutes after, and immediately made pressure on the subclavian above the clavicle, and somewhat restrained the bleeding; but it continued to ooze more or less for an hour, when it was checked completely. The pressure, nevertheless, was kept up constantly for nearly three hours. He was not at all faint; and I should think he lost only from twelve to sixteen ounces of blood. At twelve o'clock, the arterial action being very strong, he was ordered a drachm of laudanum, and after two hours it was repeated. In the evening I found he had been asleep almost constantly since he took the last dose: pulse 130, and more tranquil; skin hot; tongue moist; no recurrence of hemorrhage. Low diet, with an extra pint of milk. 6th. Had a tolerable night. On removing the dressings no coagula of blood were found about the wound, so that I think the hemorrhage proceeded from the edge of the flap, and not from a vessel of any importance. A good deal of grumous-coloured blood escaped from beneath the flap, and it has continued to discharge through the dressings during the day. Bowels opened by castor-oil. In the evening the skin was moist; tongue cleaner; thirst moderate; pulse 110, and not irritable. He had slept a good deal during the day. He is allowed a pint and a-half of milk in addition to low diet. 8th. Yesterday, the discharge being rather considerable, the lower straps were removed, when the wound was found to have a favourable appearance. All day the pulse was quick and rather hard. He took an opiate at night, and slept until eight this morning. To-day the dressings were all removed, and, for the first time, there was a moderate discharge of thick, healthy, white pus. The edges of the flap are united on all sides, excepting at the outer and lower corner, where there has been a very slight sloughing; it is completely granulated over the axillary artery. Skin moist; tongue white; pulse 95, and soft; bowels confined, though castor oil was taken. Anodyne repeated at night, and aperient next morning.

10th.—Yesterday the dressings were not removed, the discharge not having run much through the cloths; bowels opened once. This morning the stump was dressed, and looked very healthy; but he complains of pain and stiffness at the angles of the lower jaw; and deglutition of a hard substance gives him pain there as well as in the stump; but he swallows spoon-meat with facility, and can open his mouth about three-quarters of an inch. Considering the debilitated state of our patient's constitution, and the little success which attended the treatment of the former case, (although the manner in which the tetanus came on was different,) it was determined to treat this case constitutionally, by supporting the general strength, and attending to the digestive organs. In the evening he was not worse, and was quite free from spasmodic twitching, or any other affection of the muscles of the neck or abdomen; pulse 112; bowels not open, although he has taken since morning three mercurial and three colocynth pills. They were therefore ordered again. An anodyne was prescribed at bed-time, with eighty drops of laudanum; and the *linimentum ammoniæ*, with tincture of opium, was directed to be rubbed upon the jaw. 11th. Slept the whole of the night. He can only separate his teeth about a quarter of an inch; and the abdominal muscles on the right side are now rather tense. He eats spoon-meat with appetite, and swallows it without difficulty. He is in good spirits, and not at all aware of the nature of his case. He has taken during the day two doses of castor oil, which caused two copious healthy evacuations. In the evening the skin was cool; pulse soft, 95; and he felt easy and comfortable. He was directed to continue the anodyne, and to take a pill of four grains of calomel, and five of antimonial powder. 13th. Yesterday he was much the same; the pills and draught were repeated at bed-time. The tension of the abdominal muscles was less yesterday, and to-day is quite gone. The state of the jaw is much the same; he does not feel so much pain in swallowing solids, such as toast, &c. He passed a very good night; his general health improves; he is free of fever; the pulse is 80, and soft; bowels moved thrice by castor oil. The wound was dressed; it looks very healthy, and the edges are cicatrizing. He was allowed full diet of fowl, which he ate with appetite; and the pill and draught were repeated in the evening. 15th. No particular change. His mouth is a little affected by the calomel; the stump was dressed to-day, and is doing well; bowels free; affection of the abdominal muscles quite removed. The anodyne was repeated; the calomel pill stopped. 19th. The night before last the calomel was again repeated; and yesterday he took castor oil, which had the desired effect. The stiffness of the jaw continues, but he can now open his mouth about three-quarters of an inch; the soreness of the gums is gone; the general health and strength improve rapidly; he has no fever, the tongue being clean; the pulse natural; the bowels open; and his appetite good; he sleeps well at night; and sat up a few hours yesterday for the first time. The wound has been dressed every second day, and there are two patches healed. The granulations, however, being rather prominent, caustic was partially applied to them. He was ordered four ounces of port wine daily; and the anodyne was increased to ninety drops. 21st. His general health continues to improve; the wound heals rapidly; and the stiffness of the jaw is gradually diminishing. He now walks out for a short time every day. Caustic is applied to the wound, and it is dressed with dry lint. The anodyne was diminished to fifty drops. 22d. Continues to improve, and walked out to-day without assistance. 27th. The improvement continues; he cannot yet open his mouth to the full extent; the outer incision of the stump is nearly cicatrized; there is still a discharge of pus from beneath the flap. The anodyne was now abandoned. 30th. He gains strength rapidly; the stiffness of the jaw is nearly removed, so that he can open his mouth almost to the full extent; the discharge from the glenoid cavity was much less yesterday. A compress is applied over the glenoid cavity, and the caustic is applied at every dressing. December 2d. The stiffness of the jaw is quite gone; very little pus from beneath the flap; and the wound heals rapidly. He is allowed half a pint of port. 9th. No discharge from beneath the flap; the parts now unhealed might be covered with a half crown; his health is very good, and the stiffness of the jaw is quite removed. 15th. The wound to-day was not so large as a sixpence. 21st. Was discharged to the ship on the 19th with the wound about the size of a split pea; and about a week after his return it was quite healed.

I may also mention that a case somewhat similar to the preceding, but much more severe, was brought to Ricaroli, some days after we had been there, under the care of Mr Sankey, surgeon of his Majesty's brig Musquito. In this case the arm was shot away so close to the body, that nothing but lacerated integuments was left to cover the glenoid cavity, so that when he came to the hospital the face of the stump was quite a raw surface. His jaw was completely fixed; the muscles of the neck and abdomen were quite rigid; and the spasms occasionally were severe, especially when the patient moved or attempted to swallow. Mr S. gave him moderate doses of opium and camphor, with the sulphate of quina; and his general health was supported by a light nutritious diet. The wound was dressed daily. Not having kept any notes of the case, I can only give a general history from memory. The wound never had a bad appearance, but continued gradually to improve; and the relaxation of the muscles kept pace with the cicatrization of the wound. *

Art. III.—*On the employment of large doses of Opium in Dysenteric Cholera, as it appeared in the District of Ballyhackamore, Parish of Holywood, in December* 1827 *and January* 1828. By R. M'Kittrick, Surgeon to the Holywood Dispensary.

On the 23d of December last a family was recommended to the Holywood Dispensary, three inmates being reported very ill with bowel complaint, and one dead ten days before of the same disease.

A particular engagement prevented me from visiting them that day; but to obviate as much as possible the consequences of delay, I ordered the patients to be swathed in flannel, sent them twelve opium pills each, proportioning the size to their ages and the reported severity of their symptoms, and directing one to be used after every second evacuation.

Next morning at nine o'clock I visited them, when the mother of the family informed me that one child, 2 years and 10 months old, had been seized exactly three weeks before with violent vomiting and purging immediately after getting out of bed. The third stool she says was bloody. Vomiting continued more or less throughout the attack; but the appearance of the stools appeared to have changed on the fifth day from bloody to a matter of various colours, and resembling pus, which continued till he died on the twelfth day of the disease. She farther reported, that the child often had from ten to fifteen stools in an hour. Seven doses of castor oil had been given during the attack without any benefit.

Case II.—R. M., 7½ years of age, was reported to have been seized seven days after the former with exactly the same symptoms, except that the vomiting was much less frequent. He had therefore been fourteen days ill when I saw him. The pulse was 108, the skin hot, the tongue moist, with a light yellow coating on the middle, and the edges of a scarlet colour. Since the fourth day of his illness he had been unable to get out of bed. The tenesmus had been constant and most distressing from the very first; the evacuations scanty, of brownish-yellow and green appearance, and so frequent that it required almost constant attendance to supply and remove cloths. He was in the habit of being at times in bed with his brother who died, but did not sleep with him. He had taken since half-past two of the previous afternoon seven opium pills, each containing two grains. After the third pill he felt much easier, the tenesmus being greatly relieved. He sat up a little in bed for the first time on the morning on which I saw him, and ate a little bread. He was quite conscious when the evacuations were about to occur, which had not been the case for ten days before he took the pills. The pills were directed to be continued as before. Next day, namely, on the 26th, the symptoms went on improving. On the 29th, I was informed he had continued a great deal better till the day before; when, after the pills had been finished for six hours, the tenesmus and the frequency of evacuations were much increased. But since getting another supply of pills in the evening, and using one after every stool for three times, and subsequently after every second, he became quite as well as before. From this time till the 4th of January nothing occurred worth mentioning. He had passed seven stools in the previous twenty-four hours, but his appetite and digestion were good, and his liveliness had returned. He slept well, and the pulse was under ninety. I directed the pills to be continued; and on the twelfth he was free from complaint. This patient took 100 grains of opium during the treatment. The only other remedies were a blister on the belly, and an opium plaster applied to the blistered surface.

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* The maximum of the thermometer during the month of November was 71°. The minimum from 8 A. M. to 8 P. M. was 56°.

Case III.—A. M., 6 years of age, was seized two days before my visit of the 24th with symptoms similar to those observed in the former cases. He had used five opium pills, each a grain and a-half, since the previous afternoon. When I saw him he had not one stool for ten the day before; and the second pill gave great relief to every symptom. He was in fact quite well.

Case IV.—J. M. 14 years of age, four days ill. The symptoms were similar to the others, except that there had not been any vomiting. He did not live in his father's house, but visited the family every morning since the commencement of their illness, and was sometimes in bed with the sick. When I first saw him he had taken in the previous eighteen hours five opium pills of three grains each. He had then vomiting, probably arising from the pills taken that morning; the tenesmus was gone; and the stools were diminished to one every four or five hours; whereas previously his constant employment was going to the close-stool. I directed him not to use any more opium that day, unless the tenesmus returned.

On the 28th he was quite well. He had taken only one pill daily.

The disease subsequently attacked another child of the family, and also two people who were much in the house during its prevalence. The following is an abstract of the particulars of these cases:

Case V.—S. J. M. 11 years of age, January 4, 1828, is reported to have complained of slight pain in abdomen on the night of the 2d, which was greatly increased on the morning of the 3d. This pain, with tenesmus, but no evacuations, continued till half-past eight, A. M., between which time and half-past nine, six offensive stools were voided, the last bloody; the pulse was 96. She complains of acute pain in the abdomen, between the umbilicus and pubis. I ordered eight grains of calomel, and a blister to the abdomen. Next day the pulse was 88. As soon as the calomel operated twice, vomiting occurred, and a three-grain opium pill was immediately used, which appeared to have checked the disease. She was very drowsy at the time I visited her. No further treatment was required.

Case VI.—N. W., 26 years of age, lived in the neighbourhood of the M. family, and was in the habit of remaining a considerable time in the house with them for some days previous to her attack. She had exactly the same symptoms, and was treated entirely by opium pills, and one twelve-grain dose of calomel at first. She got well in ten days.

Case VII.—Samuel Pink, cousin to the Ms. and residing within a short distance, sat for a great part of the night at the wake of the dead child on the bedside, when the second case was confined. He says that a rumbling and gripes came on in his bowels early next morning, and were followed in a very short time by bloody offensive stools, similar to what have been described above. The same treatment was employed, and with the same success.

Cases VIII. IX. and X.—Three persons in one family in the same neighbourhood, the mother and two children, were also similarly affected. I treated them entirely by opium with the best effects, the third or fourth pill generally relieving the tenesmus. A child 3 years of age took the disease first in this family, and died on the fourteenth day without treatment.

The following cases occurred early in 1827, and their publication, it is hoped, will tend to illustrate farther the extent to which opium may be sometimes employed with safety in the disease under consideration, and the happy results which occasionally follow a steady perseverance in the treatment of the most unpromising and almost hopeless disorders.

8th January 1827.—J. R., 28 years of age, a black-smith, of very stout make, says he has been eight days ill with a most violent attack of bowel complaint, and he is now so weak that when any attempt is made to raise him out of bed he faints; pulse 98, feeble; tongue thickly covered with a yellowish coat; excessive thirst; thirty or forty bloody evacuations in a day, producing an intolerable sense of burning; cramps and excruciating pains in the abdomen.

I could hold out very little hope of recovery to his anxious family; but having experienced better effects from opium than any other medicine in this disease, I encouraged them to give it a fair trial according to my directions; and commenced the treatment by administering a pill with four grains, which I had in my pocket. At 7 P. M., three hours afterwards, the messenger for more opium reports, that he is greatly relieved from pain, but that the stools continue as frequent as before. I sent him thirty-two grains of opium in eight pills, directing one to be taken after every second motion.

9th, 7 P. M.—Tenesmus nearly gone; ideas somewhat confused, (probably from the opium;) pills all finished four hours ago; eight stools since, and he feels himself generally worse from the want of them. I then ordered thirty-five grains of opium in seven pills, to be used as before.

10th, 10 A. M.—Two pills only remaining. Ideas more clear; spent three hours without any stool; feels considerably stronger. I now ordered him thirty grains of opium in 10 pills, to be taken as before.

11th, 6 P. M.—Only three pills remaining. No confused ideas; pulse 90; tongue loaded; takes some soup; one stool every second hour; and he has still a little pain of the abdomen. I directed the opium to be continued as before in pills of five grains each.

14th, 8 P. M.—Five motions since yesterday morning; only two to-day; and he has taken only one pill. I directed the opium to be continued as before.

18th, 5 P. M.—For three days has had four motions, each twenty-four hours; and has taken only one pill daily. Has been a short time out of bed each day; tongue clean, and he has a good appetite. To prevent relapse, I ordered thirty grains of opium in six pills, to be used occasionally till the bowels become quite settled and natural.

22d.—He feels quite well; and there remains much less weakness than might be expected. 146 grains of opium were used from the 9th till the morning of the 18th January.

CASE XI..May 20th.—James Green, 19 years of age, thin, tall, and of sallow complexion, is reported to have been seized with severe pain in his bowels on the 13th, followed by profuse diarrhœa, and to have continued nearly in the same state, with occasional bloody stools till the 18th, when he became so ill as to be confined entirely to bed. Yesterday he became still worse. To-day his complaints had increased to such a degree, that he had a stool every fifteen minutes, accompanied with excruciating pains in the bowels and distressing tenesmus. I ordered fifteen grains of calomel to be given as soon as possible, and to be followed in half an hour by a four-grain opium pill; given, as formerly, after every second motion.

21st.—The calomel was given at half-past ten yesterday, and the first pill at eleven, which gave great and immediate relief.

22d.—Took another pill at nine A. M. yesterday, and remained free from pain, and without any stools, till five P. M. when the disease returned with considerable violence, and continued till six A. M. to-day,—the pills, in consequence of a misunderstanding of directions, not having been repeated. I directed them to be resumed. At six P. M. I saw him for the first time. Pulse 78; tongue white; skin moist; very little pain of abdomen. Had a four-grain pill this morning at six, and another at mid-day, since which there has been no stool.

23d, noon.—Five stools. One pill at five, and another at nine A. M. I ordered the same treatment to be pursued.

24th.—Pulse 58; four motions and two pills; skin bathed in perspiration.

25th.—Pulse 56; two stools yesterday, three last night. Two pills used. No pain.

26th, ten A. M.—Stools, pulse, and pills as yesterday. Complains of want of sleep and headach. A slight incoherence in conversation first observed to-day; tongue covered with a white coat; breathing natural. I directed him to discontinue the pills, unless the disease got worse.

27th.—Pulse 56; four very offensive stools yesterday. Complains of a burning pain in the abdomen. Castor oil and a blister to the abdomen were in consequence ordered. Five P. M., has just vomited about half a pint of very yellow bile; six stools in an hour and a half; excessive pain, tenesmus, and feeling as if the bowels would be all pushed out. Finding him so very ill I gave one pill and a half, or six grains, at one dose; which gave immediate relief.

28th, eight A. M.—No motion since using the six-grain pill; pulse 48, very strong and full; quite easy; perfectly sensible.

29th.—Pulse 50; two small motions yesterday, not so offensive; one pill. I directed him to discontinue the pills, unless the symptoms get worse.

30th.—Felt a return of the burning abdominal pain, and prevailed on his mother to give him two pills (making eight grains) at one time, since which he has been quite easy; slept pleasantly all night. Says he is very happy and comfortable, and is very anxious to be allowed to continue the pills.

June 2d.—Has taken a pill every night since last report; has been out of bed all yesterday, and to-day; one stool every day.

ART. IV.—*An Account of a New Method of Embalming, and of Preserving Subjects for Dissection.* By SIR G. S. MACKENZIE, Bart., F. R. SS. L. and E., &c. In a Letter to Dr CHRISTISON.

SIR,

ALTHOUGH still engaged in attending to experiments connected in some degree with the subject of this communication, the results of which may be beneficial to myself, as well as to the public, the preservation of dead bodies for dissection has become a matter of so great importance, that I feel I should do wrong were I to withhold any longer from the medical world such results as I have already obtained. As the discovery of a new method of embalming prompted me to attempt discovering means to preserve bodies in a state fit for the dissecting-room, I will proceed to describe it first; for, though it is needless to detail all the steps by which I advanced to what is in effect exceedingly simple, still it is proper to exhibit the principle on which I operated.

The object I was originally in search of was a substance which had a strong attraction for moisture, but no corrosive qualities. From previous observation I conceived that *molasses* would answer my purpose. On trying its effect on muscle, I was soon made aware that this article was likely to become more valuable than it has hitherto been, and that it might be applied to something more dignified than the manufacture of gingerbread. A mass of flesh immersed in it was in a few days deprived of all its juices, and the fibres became rigid. It was reduced into a state resembling pemmican. During the process an acid was produced, resembling the pyroligneous in some degree, and most probably a modification of the acetic. This was made sensible by the taste of the flesh. After I had made many trials, a medical friend in Edinburgh immersed a hand and part of an arm which he had amputated, in thick molasses; and after a few weeks it was converted into most perfect mummy, surpassing any Egyptian specimen I have ever seen. On being removed from the molasses muscle becomes drier; and I have specimens in my possession that I consider as sufficient proofs that bodies, after being immersed in molasses for a sufficient length of time, washed and exposed to gentle heat, and then wrapt in cerecloth or oiled silk, may remain unchanged for any length of time. The power of molasses is such, that I feel assured that disembowelling is not necessary, (unless in cases of dropsy,) injection by the æsophagus, trachea, and rectum, and the introduction of a portion into the abdominal and thoracic cavities, being probably sufficient to preserve every part. Nor should I conceive it necessary to remove the brain; it will be sufficient to give access to the molasses by one or two openings. The molasses should be thick, that is, as free from water as possible, its fluidity being preserved. It acts in two ways, by its absorbent, and by its antiseptic qualities. In all cases in which it is desired to send bodies for interment from a distance, or to prevent unpleasant effluvia, the application of this substance will be found equally, and I believe more effective than the expensive means hitherto employed.

Having observed the complete check given to putrefaction by molasses, I became anxious to apply it in such a way as to preserve subjects for dissection. In its undiluted state it was unfit; and on diluting it moderately with water I found that with muscle a fermentation was produced, not a very active one, but sufficient for the production of so much of the peculiar acid as seemed likely to endanger the vascular and nervous structures, and even the muscular fibre. Proceeding to dilute more and more, I at last found that by doing so the tendency to fermentation was diminished, but not prevented to such a degree as I wished. I likewise found that it was important to exclude the air; but in attempting to do so there was risk, if gas were extricated, of the vessels giving way. After many trials I was induced to add salt to the solution of molasses; and the result of a trial of four months' duration makes me sanguine in the hope that my object is attained. But from the great scarcity of subjects, I have had no opportunity of making the *experimentum crucis.* I have operated only on beef and mutton. Such, however, are the results, that I have no hesitation in recommending the following method of preparing subjects for being carried to a distance, or for preserving such as may come directly to the dissecting-room, and are not immediately wanted.

The subject being placed in a cask, let it be filled with liquor made of one measure of molasses, one of salt, and fifteen or sixteen of water. The head of the cask may be put on, having two small holes in it, and after twenty-four hours liquor may be poured in by one of the holes, while any air in the cask escapes by the other, and then both may be plugged up and the cask forwarded to its destination. I have little doubt, if the cask be perfectly tight, of subjects coming in a good state from the West Indies or the coast of Africa. But abundance may probably be got without going quite so far. The specimens I have examined at the end of four months, and which have undergone no unfavourable change, are in a stone vessel closed by two folds of bladder; and I expect that at the end of the year they will be found unaltered. No apparent fermentation has taken place, and no formation of mould or scum, as when the liquor and flesh are left exposed to the air. The parts are quite soft and entire. I have informed Dr Turner of the means to obtain the peculiar acid for examination.

One thing has encouraged me, above all others, to proceed; and that is the idea, that, when a subject has been impregnated with the liquor, the poison which proves fatal when an accidental scratch is given by the scalpel will be destroyed. This may be easily ascertained by experiment on some animal. The great distance of my residence from any medical school has retarded my progress. But I now commit the farther prosecution of the matter to those for whose benefit I have hitherto been experimenting, intending to confine myself to another application of molasses, also likely to be attended with benefit. The time has been when anything coming from a scientific amateur would be held in contempt; but I fear nothing of the kind in these days, when anatomy and physiology are reckoned branches of liberal education. I may, therefore, further express a hope, that ere long, by the use of the above liquor, dissecting-rooms will be entirely freed from all disagreeable smells, and the air of hospitals rendered salubrious. The latter by means of some of the liquor or diluted molasses alone being poured into all utensils for receiving *ejecta*, the effluvia from which propagate disease, as well as retard the recovery of patients. Nor is it unreasonable to hope that some trials will be made of the administration of molasses internally, and of its effect applied externally.

The specimen of mummy referred to above is in the possession of my friend Dr A. Combe.—I am, Sir, your most obedient servant, G. S. Mackenzie.

Coul, 5th May 1828.

Note by Dr Christison.—I have communicated this letter for insertion in the Edinburgh Medical and Surgical Journal, at Sir G. S. Mackenzie's request. I may add that I have seen the preserved hand in Dr Combe's possession, and can bear witness to its complete momification. It was made last August, and no pains whatever have been taken to exclude the influence of the causes which promote putrefaction; yet it is not in the slightest degree decayed.—*22d May.*

Art. V.—*Case of Monomania, caused apparently by circumscribed Chronic Meningitis, with Remarks.* By David Scott, M. D., Cupar Fife.

John Anderson, M. D., aged 41, of fair complexion, sanguine temperament, and endowed by nature with a healthy constitution, was, after the general peace in 1815, placed on the half-pay of the navy, in which for many years he maintained the character of an active and zealous member. He came to reside in Cupar, his native town, where, from the extent and variety of his information, the sociableness of his habits, and urbanity of his manners, his company and conversation were generally courted. He contemplated settling somewhere, but his designs in this respect were always frustrated; and from a repetition of disappointments, conjoined with domestic causes, he became liable to occasional fits of despondency. About the year 1820, his intimate friends began to remark a peculiarity of manner, and singularity of ideas; but these were only occasional, and during times of temporary excitement. Addicted to study from early youth, and distinguished for his acquirements in learning, he continued to read much both of English and French authors; and in the course of his reading he met with some articles that treated of animal magnetism, which struck his attention, and made a great impression on his mind. Pondering long on this subject, and beguiled by the subtle and speculative reasoning of these authors, he began first to admit the possibility of animal magnetism, and then imagined that he himself was subject to its influence. Soon afterwards, from an occasional incoherence of action, and strangeness of exclamation, it became apparent to his friends that this opinion was assuming an ascendancy over his mind. They endeavoured of course to scout it as nonsense, and to rail at him for allowing so vague a chimera to disturb his thoughts; but still the idea gained ground, and in a few years took so firm a hold of his imagination, that what was formerly merely admitted as possible, now became matter of serious truth and cause of apprehension. He no longer attempted to conceal his belief, but avowed it openly, and even accused some of his best friends and acquaintances of being accessary to keeping him under its influence, and holding him in a continual state of alarm. His nights in consequence became greatly disturbed, and he seldom obtained any satisfactory rest. If he did sleep, he was tormented by oppressive dreams and other strange phantasms. His notion of animal magnetism was, that certain individuals, who had an antipathy to him, could wield at will an influence over him of so malignant a nature as to deprive him of every kind of enjoyment, and keep him in a continual state of discomfort and anxiety. He invested these *invisibles*, as he called them, with vast power. No place was proof against their malignity, nor could distance restrain it. He went to Paris in the year 1822, with the view of escaping from it, but he found its influence there as great as at home. He frequently during the night could hear his enemies planning schemes for his annoyance. In his imagination they had recourse to every kind of torment which the most wicked and inquisitorial minds could invent, and were inexorable and persevering in their attacks. In the night-time, for example, they would rest on his breast with the weight of a millstone, deprive him of sleep, disturb his digestion, lock up his bowels, &c. &c.; at other times they would stimulate the bladder and rectum so powerfully and so immediately, that he had not time to undress himself; and on some occasions they would take such unwarrantable liberties with him, that he was compelled, in self-defence, to roar out loudly, by which he thought he obtained a relaxation of annoyance. Several times he made application to the local authorities to control their malignity, and even took bond from some of his acquaintances that they should cease to disturb him. On all other subjects, saving animal magnetism, his judgment was sound, and indeed in reasoning he evinced much acuteness; a stranger, in short, when the peculiar subject was not agitated, could not detect any thing unusual about him. Latterly, however, he complained of an impairment in memory, and that of a peculiar kind. He could not recollect the words he was accustomed to express his ideas in; he would therefore stop during speech and labour for them; he seemed to perceive them as it were in his mind, but could not get his recollection to lay hold on them. He continued in this state for several years, without apparently suffering in health, or losing much flesh.

About a year before his death, he had several attacks of pneumonia of the left side. On these occasions, though seriously ill, there was considerable difficulty in getting him to submit to medical treatment. Having a great aversion to medicine, he considered it in his case as useless and inert, and by no means calculated to remove the cause. At these times the only chance of success with him was, to admit his premises, but to draw very opposite conclusions. With this view we acceded to his notions about animal magnetism, and held, that, so long as its influence was applied to the body generally, its effects were innocuous; but so soon as so powerful a stimulant was for any length of time directed upon any single organ, the result could not be otherwise than hurtful, and would terminate in inflammation.

In this manner, though he pertinaciously retained his opinion as to its cause, he would allow us to combat its supposed effects, and submitted to be bled, blistered, &c. &c.

For several months before he died he had a short dry cough, accompanied with a sibilous sonorous respiration; he complained also of a severe pain in the back, with an oppression and tightness across the chest, which he compared to an iron girdle. He was greatly dispirited, and confined himself very much to the house. His pulse, (unless when he was labouring under one of his inflammatory attacks, when it was hard and quick,) felt always soft, equable, deep-seated, and feeble, but never intermittent. The sound of the heart was hardly perceptible, but its contractions appeared regular. The lower portion of the left breast and back sounded fleshy on percussion, and the respiration in these places was not perceptible by the stethoscope; but higher up, and opposite the bifurcation of the trachea, it was sibilant and sonorous. It was considered that, in addition to monomania, he laboured under chronic bronchitis, with some hepatization of the lower portion of the left lung; and from the treatment applicable to these he derived relief, though the noisy respiration never left him.

On the day of his death he had invited a few friends to dine with him. They had assembled, and all was ready; when suddenly their worthy host was seized with coughing, hawking, and spitting of blood, which increased so rapidly, and came forth in such vast quantity, that in a few minutes, being unable to expel it, he died suffocated.

Dissection.—The extreme suddenness and singularity of his death created a desire on the part of his acquaintances, that the cause of it should be ascertained; I therefore examined the body in company with Drs Grace and Spens. The body was not emaciated, there being a considerable quantity of fat in the cellular membrane. In the cavity of the abdomen we could discover nothing unusual, unless that the liver was considered larger than natural, but not diseased in structure. In the chest, after the sternum and cartilages of the ribs were removed, we found about a pint of fluid blood in each of its cavities. There was interlobular adhesion of the left lung, but none between the *pleura costalis* and *pulmonalis.* Its inferior lobe felt hepatized and completely gorged with blood, the bronchi and air cells being filled with it. After tying the blood-vessels in the neighbourhood of the heart, we endeavoured to remove the trachea, bronchi, and both lungs from the cavity of the chest, in order to give us more room to trace the source of blood. In doing this we discovered a large aneurism of the descending thoracic aorta. It had its seat in that vessel immediately after it gives off the left subclavian, contained about a pound of fibrinous matter in concentric layers, occupied the whole cylinder of the tube, and pressed strongly on the roots of the bronchi and on the vertebræ of the back, so that a considerable portion of the vertebræ was eroded and absorbed. On minutely examining its connexions with the surrounding parts, we found a large opening communicating with the left bronchial branch of the trachea, the rupture into which sufficiently explained the suddenness of death, and the presence of blood in that tube and other parts of the lungs. The right lung, though filled with blood, was otherwise perfectly healthy.

We opened the cavity of the cranium, and observed with some attention the condition of the brain. The veins on its surface, and particularly where they entered the longitudinal sinus, were very turgid with blood, but this we considered as accidental, and arising from the suffocating manner of death. There was an inflammatory deposit, apparently of old standing, under the arachnoid coat, with thickening of the membrane itself, and adhesion to the parts beneath for about the space of an inch and a half in length, and one in breadth, on each side of the longitudinal sinus, midway between the *crista galli* and the level of the commencement of the lateral sinuses. The cortical substance of the brain under this spot was not changed in appearance, or altered in structure. We could observe no other morbid alteration in any part of the membranes or of the brain proper, either as to softening or hardening or other morbid change. Nor was there any watery deposit in the lateral ventricles, or any thickening of their lining membrane. The cerebellum, *tuber annulare*, *medulla oblongata*, and all the nerves issuing from the brain, appeared to be perfectly natural.

Remarks.—We have seen from the dissection that our patient laboured under not only an illusory complaint, but also under a serious organic disease, which escaped detection during life. This is one of the misfortunes to which people in his condition are liable. They feel a variety of imaginary sensations, sufficiently intense for the time, but, from their evanescence and sudden change of character, they are little regarded either by the patient himself or his attendants. Occasionally, however, these deceptive symptoms are mixed with those arising from actual disease; and it is from a combination of this kind that arises the difficulty of separating the true from the false; but whenever they begin to assume a permanency of character and situation they ought to be considered as real, and demanding attentive consideration. For example, the fixed burning pain which my patient long complained of in his back, and a sharp lancinating pain which he referred to the left ventricle of the heart, were both evidently owing to disease; the first caused by the erosion of the vertebræ of the back from the pressure of the aneurism, and the latter to inflammation of the lower portion of the left lung. Yet it is remarkable that both these pains frequently subsided and disappeared for days and weeks, and were succeeded by others of an anomalous character. Here, therefore, the distinction between the true and false symptoms is not so easily drawn; and when the patient labours under a misapprehension of the nature of his complaint, and attributes all his feelings to some uncommon cause, as in the present instance, it is exceedingly difficult to arrive at a just diagnosis. The sibilous and sonorous respiration was evidently produced by the pressure of the aneurism on the roots of the bronchi, particularly the left, diminishing the calibre of the tube, and thereby obstructing the ingress and egress of air to and from the lungs. There was no intermission of the pulse, because the aneurism was seated beyond the giving off of the subclavian arteries, neither had he ever any unusual pulsation in the chest, or any labouring or palpitation of the heart. The latter organ was found healthy, which accounts for its natural action; and the only indication of the diseased aorta was an indescribable anxiety and perpetual uneasiness, which he was unable to refer to any particular place, which constantly tormented him, and which he as constantly referred to some invisible agency. I do not think, however, that the disease in the chest had anything to do with the aberration of mind, although it might contribute to exasperate it.

The hallucination in reference to animal magnetism is a subject much more difficult to unfold, as its investigation embraces the connexion subsisting between mind and matter. That this hallucination was caused by an irritation, or chronic inflammation of a fixed part of the surface of the brain, appears to me exceedingly probable; because, in the first place, an inflammatory deposit under the covering membranes, with adhesion to the substance beneath, was found on dissection affecting a small space on the surface of the brain; and, secondly, because the mind was unhinged only on one particular point. On all other subjects his judgment was entire, and he could discourse as rationally as any other man; and in like manner on dissection we found all other parts of the brain perfectly healthy. There would appear to be something here like a chain of cause and effect. I shall not go so far as to maintain with the phrenologists, that the mental powers of man and other animals depend upon the size and developement of certain parts of the brain, or that the peculiarities of individuals are always owing to a peculiar conformation of that organ,—merely because, from not having yet directed my attention to that subject, I am unable to form any precise opinion on the matter. But from what I have heard, and the notice taken of it by some periodicals, I think it bears in the outline a great degree of plausibility.

It is exceedingly natural to think, that the organ through which alone are manifested the thinking powers or mind of an individual, must be influenced, or entirely subverted, according as the brain is either simply irritated, or altered and destroyed in structure; because the like thing happens in other organs of the body. Farther, it is probable that all the nerves of sense have a distinct termination in the brain, or that certain portions of it are peculiarly destined for the developement of these senses. Hence the sense of hearing may be affected without injuring the sense of sight. And if this condition hold with regard to the external senses, it is extremely reasonable to think that the like circumstance obtains with the internal, and that each has a located portion of the brain through which it is peculiarly manifested; and by consequence, if any of these parts be injured or destroyed, the properties of the mind which depend on them will in like manner be injured or destroyed. The difficulty of the science would appear to consist entirely in discovering these parts, and allotting to each its proper function. To accomplish all this would require an immensity of observation continued through many years, nay ages; but notwithstanding these acknowledged difficulties, if the proposition be founded in truth, they ought to deter no one, desirous of tracing nature to her utmost recesses, from attempting to surmount them; for if this object could once be attained, there is no doubt that it would greatly contribute to simplify the treatment of diseases of the brain. The mind itself is totally unsusceptible of disease; for who can suppose that an incorporeal substance is liable to diseased action. It is an obstruction or obscurity in the organ alone that causes an imperfection or obscurity in the mind, in the same way that dim spectacles will always convey images to the optic nerve in a dim manner. If they happen to be stained, then all images will come to the mind with the same hue; and should they be opaque, none will be transmitted. An opacity of the lens of the eye is no proof that the optic nerves are incapacitated from receiving the impression of images. If the opacity be removed by nature or by an operation the individual will see as before. In like manner, if the obstruction or incapacity of the affected part of the brain be removed, the mind will be as entire as ever. These observations would go to prove that mania, monomania, hypochondriasis, &c. are corporeal diseases, and that we should first endeavour to remove the physical incapacity of the injured organs, and afterwards confirm the cure by regimen and moral restraint.

But while we give our cordial assent to the outline of the system advocated by the phrenologists, yet we are by no means certain, that the localities they have pitched on as the organs chiefly concerned in the evolution of the mind, if we may so speak, are correct; because, in the first place, it is very probable that it may require the co-operation of two or more organs to express even the most simple idea; and, secondly, I really do think it would require an immensity of observation, and comparison of heads of every size and form, besides dissections of cases such as the present, before even the function of a single portion of the brain could be permanently established, and far more before the whole of the organs composing the brain could be reduced into any thing like a system.

The phrenologists have greatly injured themselves by their pertinacity in adhering to system; for, instead of making observations, and recording facts to serve as materials for some future building of the science, they have at once assumed that their work is so perfect as to be practically useful. Now this rapidity of perfection has never obtained with any of the sciences depending on observation;—a remark, of which the sciences of medicine afford many a melancholy example.

Cupar-Fife, 20th April 1828.

Art. VI.—*On Hernia.* By Andrew Dewar, Surgeon, Dunfermline.

THE disease known to surgeons by the name Hernia has been so often and so ably discussed, that it will perhaps be thought that every practical point of any consequence has by this time been finally settled. Although I have nothing to communicate which can be regarded strictly as new, yet, as the disease is of very frequent occurrence, and presents itself under varied aspects, and is in all of them full of danger, perhaps I will be excused for stating a few facts which have fallen under my own observation on the subject.

Herniæ are liable, from various causes, to be confounded with other diseases which occur in the groin. We are cautioned against such errors in surgical works and lectures; but it may be also useful to show that they nevertheless are actually sometimes committed.

Case I.—When residing in Ayrshire, I recollect that a surgeon from a neighbouring town happened to be in the country, and was requested to visit a man who was affected with a swelling in the groin, caused by an enlargement of an inguinal gland. He at once pronounced it to be rupture, recommended the operation, and with the utmost promptitude proceeded to its performance. He made a deep incision across the groin, by which he divided the enlarged gland and the spermatic cord. The spermatic artery bled furiously, and in consequence of the retraction of the cord it was not secured without some difficulty.

Hernia may be not only confounded but likewise complicated with enlargement of the glands of the groin, and thus present a case of very difficult diagnosis.

Case II.—I was sent for last winter to visit a patient some miles in the country, who was said to be dying of a "rupture colic." When I reached the place the man had been dead about an hour. On examining the groin I found a swelling in the situation of the femoral ring. The tumour was hard, and resisting on the surface; but when pulled out, and grasped with the fingers, it felt like hernia. The symptoms, too, under which he had laboured were those which distinguish strangulated hernia. I divided the integuments, and found a small knuckle of intestine strangulated in the femoral ring, and hid under an enlarged gland, which so completely covered it as almost wholly to conceal it from observation.

A circumscribed suppuration in the situation of hernia may very readily be mistaken during an attack of colic for a rupture. The following case is worthy of being recorded.

Case III.—I was requested by Dr Stenhouse to visit a patient of his who was labouring under hernia. The man was suffering from pain and distension of the belly, frequent vomiting, and obstinate costiveness. There was a firm elastic swelling, about the size of a pigeon's egg, occupying the inguinal canal. He complained very little of pain on handling the tumour. When an attempt was made to return it into the belly, it receded in a slight degree within the canal, but returned to its former situation immediately on the fingers being removed. All the usual means of effecting reduction were tried without success, and the operation was determined upon. When the tumour was opened by Dr Stenhouse, a small quantity of a glairy fluid ran out, and the finger was passed to the second joint into a shut sac, which had no communication with the abdomen. I need not say that the man was in no respect relieved by the operation: his bowels, however, ultimately yielded to the usual remedies, and he recovered. I do not yet know, after frequent reflection upon this very interesting case, how it could have been distinguished with certainty from hernia.

The means which have been proposed for aiding reduction by the taxis are uncertain and fallacious. Indeed, whoever accurately considers the condition of the gut, and the circumstances which accompany and follow its protrusion, will not expect a great deal from medicinal remedies. The gut, in the act of escaping from the abdomen, passes through a narrow opening composed of parts tolerably resisting, into a new situation, where the resistance is greatly diminished. In passing it is emptied of its contents, and compressed into the smallest bulk which it can possibly occupy. As soon, however, as it escapes from the canal, and the resistance is diminished, it begins to resume its natural character of a tube—it partly expands—it is a living part, the functions of which are active and vigorous, it fills consequently by its own secretions—as it grows in size the stricture round its neck increases, and the return of the blood by the veins is prevented—the general health of the patient now rapidly suffers—the peristaltic motion of the bowels is inverted, and feces are rejected by vomiting—the bulk and irritation of the strangulated portion are every moment augmenting—it inflames—the inflammation extends backwards into the belly—and mortification and death speedily follow.

It is obvious that from the instant of its protrusion the gut is becoming every moment more and more incapable of being reduced. It expands as soon as it has escaped from the canal, and is merely covered by the soft and yielding integuments of the belly; it fills by its own secretions; it increases in size by the impediment which the stricture presents to free circulation; and it is not folly merely, it is highly criminal to waste the few precious moments that remain in fruitless repetitions of remedies which have been found already ineffectual. There is perhaps no ailment in the whole catalogue of diseases which calls more pressingly for the interference of art.

In our attempts to reduce the gut by the taxis, all rude or long-continued pressure should be avoided. Gentle efforts to express the contents of the gut with the one hand, while with the other we endeavour to bring the body of the tumour into a straight line with its neck, should for a short time be cautiously persevered in. During these endeavours the fasciæ ought to be relaxed as much as possible, by raising the shoulders and breech, while the thigh is bent and rotated inwards.

Of the various means which have been recommended as aiding reduction by the taxis, few seem to possess any considerable efficacy. On some occasions I have found benefit from bleeding the patient to syncope, while he was immersed in the warm-bath. This plan of treatment, however, can only be justified if the person is vigorous and healthy. I once succeeded by dashing a pailful of cold water over the naked belly, after having failed with a great variety of remedies.

The injection of an infusion of tobacco is, I believe, the remedy on which at present the greatest dependence is placed. I cannot speak favourably of it from my own experience. I have seen it frequently tried, but have not known it succeed in a single instance. Its effects, too, are very painful and exhausting, and reduce the patient for a considerable time to a condition very unfavourable for bearing the shock of the operation.

In every small and recent hernia the taxis should not be long persisted in; and if bleeding to relaxation, the warm bath, and gentle well-directed pressure fail, I would have immediate recourse to the knife. With large and old hernia, however, the case is very different; the passage through which the gut has descended has become permanently enlarged by the presence of the tumour; the parts accustomed to some degree of restraint are not so liable to suffer from moderate pressure; and hence the means of cure without operation may be safely continued for a longer time. Bleeding, the warm bath, pressure, the dashing of cold water, the injection of tobacco, may all be tried. It should, at the same time, be borne ever in mind, that there is an early limit to all our endeavours at reduction by the taxis, and that the life of the patient is far more endangered by delaying the operation an hour too long, than by performing it an hour too soon.

There are some instances in which ruptures have retired, it would seem spontaneously, after all remedies had been tried, apparently without benefit.

Case IV.—Mr Wishart mentioned a case to me, in which all the ordinary means of relief had been tried, the patient was laid upon the table, the parts were shaved for the operation, and he was just about to commence his incision;—when the gut retired.

Case V.—A similar case occurred to myself about a year ago. I was called during the night to visit a man who had been attacked with rupture on the preceding evening. I tried every means of reduction, even the tobacco injection, without avail. I had every thing arranged for the operation; but on again examining the parts, the hernia was gone.

Though such cases do occur, they are far too rare to afford any rational apology for delaying the operation.

How long should the operation be delayed? As no definite rule can be laid down upon this subject, and as much must be left to the discrimination of the surgeon, I cannot perhaps contribute better to the answering of this question, than by relating a few cases which have come under my own observation, and which strikingly exhibit the danger of a late, and the advantage of an early operation.

Case VI.—Several years ago, I was requested by Dr Stenhouse to visit Mrs S., who had been attacked the evening before with a femoral hernia, which he had failed, after various attempts, to reduce. The tumour was small, tense, and painful to the touch; she was affected with frequent vomiting; her bowels were obstructed; her belly was tumid, and unnaturally sensible. Dr Stenhouse and I entirely concurred in opinion, that the operation should be immediately performed. Just as we were on the point of proceeding to the operation, a professional brother made his appearance, and Dr Stenhouse thought it prudent to consult him in the matter. He unhesitatingly pronounced the operation unnecessary for the present, and advised the repetition of the tobacco injection, for the purpose of "relaxing the tension." Remonstrance was in vain, and all farther proceedings were delayed until the evening, when it was agreed that we should meet at his house at six, (eight hours after,) and he had no doubt, he stated, that he would succeed on his return in replacing the gut. We met, and were told that he had patiently pressed the hernia, and that, although he had failed in fully replacing it, the tumour was a great deal softer, and that there was no occasion for the operation, at least that night. Dr Stenhouse would not be persuaded to delay longer, and we proceeded to the house of his patient, (our friend declining to accompany us,) and found her in *articulo mortis*. The tumour was softer certainly, but from what cause the event testified. We thought it our duty still to make one desperate effort to redeem the error of delay, and without loss of time performed the operation. On opening the hernial sac a feculent fluid ran out, and when the belly was pressed upon, feces were seen to issue from a ragged opening in the gut, where it had been pressed against the firm edge of the falciform process. The woman died about half an hour after she was replaced in bed.

Case VII.—On the 20th of May 1823, I was requested by my friend, Mr Bowes, to visit Mrs I., who had laboured for a week under a strangulated femoral hernia. All the usual means of relief had been tried in vain, and she had obstinately refused to submit to the operation. She vomited incessantly; her bowels were obstructed; her belly was swelled and painful; the tumour was exquisitely sensible, and the integuments which covered it were thickened, and consolidated by inflammation; her strength was exhausted, and her mind wandering. She now consented to the operation, which was instantly performed. The dissection was rendered extremely difficult, in consequence of the altered state of the parts which covered the tumour. A great quantity of fluid ran out of the abdomen when the stricture was divided. The sac contained a small turn of intestine, enveloped in a portion of omentum of a dark brown colour, which, however, became lighter on being relieved from strangulation. I replaced both the gut and omentum within the belly, after having cautiously removed the adhesions which connected them to the neck of the sac. She remained for a long time in great danger; but leeching, blistering, and laxatives, and subsequently laxatives and tonics, succeeded, after several weeks, in restoring her to perfect health.

Case VIII.—Mrs B., residing about four miles from Dunfermline, was attacked on the 2d July 1824 with a femoral hernia after a violent effort in pulling. I saw her on the evening of the 4th. She was then very much exhausted. The tumour was small and tender; the belly was swelled and painful; she vomited often, but had no motion in her bowels; her pulse was small, frequent, and fluttering. All the usual means had been repeatedly tried during the two preceding days by a surgeon in attendance. I recommended of course the operation, performed it immediately, and succeeded without any difficulty in replacing the gut. No means, however, were successful in moving her bowels. She continued to sink, and died about eight hours after the operation.

Case IX.—In the beginning of last year an old man, residing in the New Row, was attacked with a strangulated inguinal hernia. All attempts to effect reduction failed, and he expressed his determination to die rather than submit to the operation, until the seventh day from the strangulation, when he begged that he might be operated upon, and Mr Bowes in consequence requested my assistance. The belly was greatly distended, he lay upon his back, and could not be raised without much difficulty into the sitting posture; his bowels were obstinately obstructed; he vomited constantly; his pulse was small and frequent; his mind wandered; his features were sunk; and his breathing was hurried. The operation was immediately performed. The sac contained a considerable portion of intestine, which had become so thick and fleshy, that I was obliged to divide the stricture much more freely than is necessary, or even justifiable, upon ordinary occasions, before it could be returned. So entirely, however, was the vermicular motion of the intestinal canal destroyed, that the portion contained in the herniary tumour could not, by any device, be retained within the abdomen, but descended by its own weight, like a portion of inanimate matter, into its former place. It was carefully freed from strangulation, and allowed to remain. No means were of any use in moving his bowels, and after lingering two days he died.

If the operation when long delayed be so unsatisfactory, it is not a little gratifying to know, that, if performed when strangulation is recent, success is almost uniform.

Case X.—Henry Fothringham, an old man, was attacked with a strangulated inguinal hernia one evening in December 1817, about eight o'clock. I saw him at ten, when the taxis was attempted in the warm bath, and when he was under the influence of the tobacco injection; but without success. About four o'clock in the morning, assisted by Dr Stenhouse, I performed the operation. Nothing unusual happened, and in less than a fortnight he was walking about the house.

Case XI.—David Eddie waited upon me at my own house, early in the morning of the 28th of October 1819, complaining of pain in his bowels, vomiting, and an inclination, but inability, to go to stool. He had never previously been affected with hernia, and was even at this time unconscious of the existence of a tumour in his groin, until his attention was called to it by my examination of the part. This tumour was a small inguinal hernia, so firmly strangulated as to resist all attempts at reduction by the taxis, even when aided by the warm bath and the tobacco clyster. At twelve o'clock I performed the operation. No untoward symptoms occurred, and the man speedily recovered.

Case XII.—Mrs Main was attacked on the evening of the 27th of April 1823 with a strangulated femoral hernia. I saw her on the following morning about eight o'clock. The tumour was small and firm. Pressure failed in returning the gut. She was put into the warm bath, but there also reduction was attempted without success. With the assistance of Mr Bowes I performed the operation at 10 a. m. She was almost immediately relieved from suffering, and in eight days was able to resume her domestic occupations.

Case XIII.—I was requested on the 30th of June 1823, by the late Dr Alexander, Senior, to visit an old woman who was labouring under a strangulated femoral hernia. The gut had come down early in the morning, was small, and firmly fixed, and had resisted every effort at reduction, although accompanied with all the auxiliary means which are usually employed. With his concurrence I immediately performed the operation (about eight hours after strangulation), and she was very soon able to return to her ordinary employment.

These cases require no comment. They stand in very grateful contrast to the mortifying failures or hair-breadth escapes which are the never-failing consequences in this disease, of undecided and tardy measures.

It is not possible, I believe, to fix a precise time for the performance of the operation, for it must vary with the circumstances of every case. When, however, strangulation has really taken place, *i. e.* when the bowels are no longer pervious to their contents; when the circulation in the prolapsed part begins to be interrupted; and when the peristaltic motion of the portion of the intestinal canal above the stricture has become inverted: when strangulation in this sense has supervened, the operation cannot be long delayed without imminent hazard to the life of the patient. In such a case I would not do more than merely attempt reduction in the warm bath. If the gut could not be returned after immersion for half an hour, I would instantly proceed to the operation. I have never seen a patient die—and there are few who have—from the effects of the operation alone. But who has not seen many sink under the influence of incurable disease of the bowels, which an early recourse to the operation would certainly have prevented?

In all the cases which I have yet mentioned more or less of intestine was contained in the hernial sac. The presence of intestine, however, is not necessary to produce all the worst symptoms of strangulated hernia.

Case XIV.—My assistance was requested by Dr Stenhouse in a case of femoral hernia in a young woman, which had been strangulated for some hours. The tumour was small; the belly distended; the bowels obstinately closed; she vomited often, and suffered besides all that agonizing anxiety and restlessness which accompany an interruption to the healthy function of the alimentary canal. All the ordinary means of relief having failed in affording any mitigation of the symptoms, the operation was performed by Dr Stenhouse, and a small portion of omentum alone was found firmly strangulated in the femoral ring. The stricture was divided, the omentum was replaced, and every symptom of disease speedily abated.

It would be altogether out of place to enter into a minute description of the operation for hernia, since it has been so often and so well described. A few desultory remarks, however, I may be permitted to make.

With regard to the first incision, it appears to be a matter of very little consequence whether it be made in the form of the letter T, or of almost any other letter, provided it be begun so high as to allow the point at which the gut escapes from the belly to be fully exposed. This requires the incision to be made higher than at first sight would seem to be necessary. Unless the opening through which the gut issues be fairly uncovered, the operator is very much embarrassed in the division of the stricture, and is often awkwardly obliged, with much additional suffering to the patient, again to cut up the integuments, when he ought to be completing his operation.

The skin being properly divided, the operator next comes in contact with those celebrated *fasciæ*, respecting which so much has been said and written. He who expects to find these fasciæ in the living body in distinct and well-defined layers, as demonstrated in schools of anatomy, or as described in the works of surgical writers, will be disappointed. They are formed out of the cellular substance which envelopes the glands, the muscles, and vessels of the groin, and, with the aid of a little dexterity, may be chopped into an almost endless variety of forms, to suit the opinions or the fancy of any demonstrator. During the necessary dissection for exposing the gut, the firm coverings of cellular membrane, or *fasciæ* (if you will) by which it is confined, are to be picked up in small portions, as the operator best can, on a director, and divided with the point of the knife, until the tumour (if small) is fully exposed, is no longer bound down into its situation, but admits of having the finger passed freely around it. Still, however, the gut is covered by the *fascia propria* and peritonæum. It is at this stage of the operation that the " tactus et visus eruditus" become especially valuable; for in almost every operation I have performed I have experienced some hesitation in discriminating the *fascia propria* from the sac, and indeed the sac from the gut itself. Nor am I solitary in this respect, for those of my friends whom I have had the good fortune to see operate have felt oppressed with the same difficulties. It is indeed true, that when the gut has been at last uncovered, it presents in general an appearance sufficiently distinctive to satisfy every doubt; for " its circular vessels, and smooth and glistening surface," are not to be found in any other structure concerned in the operation. But when it is recollected that adhesion may have taken place between the sac and the gut, to such a degree as to render the surface rough and uneven, and the gut itself may be so altered or diseased in its structure as to conceal the circular direction of its vessels, it requires a cool head and a stout heart not to feel in this stage of the operation both anxiety and hesitation.

The escape of a fluid is generally supposed to indicate the opening of a sac; but this test, though it may in general hold true, yet cannot be depended on in every case.

Case XVI.—Some years ago I assisted my friend, Mr Alexander, now of Wooler, at an operation for femoral hernia. The dissection was conducted in the ordinary way. The tumour was uncovered, and a small portion of the bottom of the sac, as was supposed, was raised with the forceps and punctured. Such a quantity of fluid escaped as seemed to afford satisfactory evidence that the sac was opened. On slitting it up, however, a structure, different in appearance from the gut, presented itself. It was punctured, and a second discharge of fluid took place. The gut was now discovered strangulated in the femoral opening.

Case XVII.—In the last operation for hernia which I have performed a similar collection of fluid was found between the *fascia propria* and the sac. In both cases, however, it should be remarked, that the fluid contained within the *fascia propria* was colourless, while that contained within the sac is generally, if not always, turbid.

When the gut has been exposed the most important part of the operation remains, viz. the division of the stricture. The nail of the finger is to be carried as far as possible, without rude pressure, into the constricted neck of the sac, a probe-pointed bistoury conducted along the finger, and the tightened part divided to an extent somewhat similar to the tooth of an amputating saw. If this should be insufficient, the first wound need not be enlarged, but another resembling the first, in another part of the stricture, may be made. By thus *notching* the point of strangulation we can make sufficient room for the return of the gut, and at the same time avoid the risk of wounding any blood-vessel which may chance to stray from its ordinary course.

There is perhaps no operation which affords less opportunity for display than that for hernia. Every step of it should be conducted with all possible deliberation, the parts being divided by *touches* with the point of the knife, rather than by *cutting*. While there is no part of the operation which can really be called difficult to a surgeon who has been accustomed to practical anatomy, at the same time it is rather a nice and delicate dissection, requiring a complete knowledge of the relative situation of the parts, and a perfect facility in the use of the knife.

I have made these few general remarks on this interesting disease, not because they contain anything new, or even uncommon, but rather as conveying the result of my experience upon the subject; a mode of communication, which, if more generally adopted, would perhaps tend more to diffuse practical knowledge than the relation of any single case, however rare or important.

Dunfermline, November 1, 1827.

Art. VII.—*Account of a Case in which Cæsarean Section was performed.* By John Crichton, Esq. Surgeon, Senior Surgeon to the Royal Infirmary of Dundee

Although the Cæsarean Section, or cutting into the uterus for the purpose of delivery in impracticable labours, has almost invariably been followed by the death of the mother in this country, yet, on the Continent, where less hesitation and delay are suffered to take place, there are many instances of recovery on record. These afford reason to think that the danger does not so much consist in the nature of the operation itself as in the circumstances under which it is performed.

While, therefore, nothing can justify our resorting to this extreme expedient but the conviction of the utter impossibility of extracting the child *per vias naturales;* yet, when that impossibility is fully established, we should not be deterred by the feeling of horror, naturally excited by the idea of cutting into the womb, from putting it in practice before the patient is reduced to such a state as to preclude the hope of a favourable result. Cases, however, where delivery is impracticable by the natural way are fortunately of very rare occurrence. The first that ever presented itself to me was about two years ago, and under the following circumstances:—

In the month of April 1826 I was sent for to Stobsmuir to visit M—— R—— a young woman, 22 years of age, who had been taken in labour six days before, and attended by several medical practitioners in succession, who had all given up the charge as a hopeless case. On my arrival I found her in a state of extreme exhaustion. She was labouring under urgent thirst and vomiting of bilious matter; frequent voiding of urine, but without alvine evacuation for three days; the pulse was 150; and she had considerable tenderness of the abdomen. The waters had drained off several days before; and the great fetor of the apartment augured nothing favourable.

Upon examination the pelvis appeared remarkably distorted. The *rami* of the *ossa pubis* and *ischia* were so close as not to admit the finger; and the *coccyx* was turned to one side, by which the posterior portion of the outlet was enlarged so as to admit two fingers with ease. At the brim the *pubes* approached the *sacrum* in such a manner as to admit the finger with difficulty, and during a pain there was felt the pushing down of a substance, apparently a portion of the scalp of the child. Being astonished at so remarkable a deformity of the pelvis in a young woman otherwise well-formed, I made more particular inquiry at her mother, who brought to my recollection that this was the same girl I had been called to see a good many years before in a different part of the country, in consequence of a severe injury sustained at a threshing-mill. She had got entangled betwixt the end of the beam and one of the pillars of the building whilst the machine was at work, and mangled in a shocking manner, the parietes of the abdomen being laid open from the umbilicus all the way to the perinæum, and the bones of the pelvis crushed in pieces. Contrary to all expectation she recovered, and her mother recollected an observation I made at the time,—that it would be a fortunate circumstance for her daughter were she suffered to lead a single life. It so happened, however, that a young man, her cousin, had taken a lease of a toll in their neighbourhood; and rather imprudently she was sent to assist him in the charge until he should be otherwise provided for. She returned to her mother's house ailing and despondent, as if impressed with a presentiment of the fate that awaited her.

Taking out with me several professional friends, we all concurred in opinion as to the utter impracticability of delivery in any manner by the natural way. There was reason to think the child still alive. The young woman herself seemed sure of it, and, while she appeared resigned as to her own fate, she shrunk at the thought of her child finding a tomb in the womb of its mother. The matter was explained to her, and she did not hesitate a moment.

In her exhausted state it would have been hazardous to have removed her from bed. A folded blanket was, therefore, introduced beneath her, and an incision made in the direction of the *linea alba* by the side of the umbilicus, commencing three inches above, and terminating about the same distance below it. The peritonæum was then divided to the same extent, and the uterus brought into view. Cutting into it the placenta was found adhering underneath, but was easily separated from its attachment by the fingers. Upon removing its contents the uterus contracted and the intestines protruded. These were gently retained by Dr Nimmo during the sponging out and stitching up of the wound, whilst Mr Alexander took charge of the child, which in a short time gave indications of life. The patient endured the whole operation with the greatest composure, not even uttering a sigh, but appeared sensibly affected and grateful when assured of the safety of the child; and it appeared to us all, that, if the operation had been undertaken previously to the commencement of fatal symptoms, a speedy recovery might have been looked for. She gradually sunk away without pain, and died about eight hours afterwards.

We went out next day for the purpose of inspecting the body, but could not by any means prevail upon her friends to grant permission. A portion of the scalp of the child sphacelated in consequence of the long-continued pressure of the head upon the pubes. Nevertheless he throve well, and is now a stout healthy boy.

Dundee, 15th May 1828.

ART. VIII.—*Case of Osteosarcoma of the Lower Jaw, in which nearly one-half of that Bone was removed from one of its Articulations.* By ROBERT LISTON, Esq. one of the Surgeons of the Royal Infirmary of Edinburgh, Lecturer on Surgery, &c. &c.

To the EDITORS *of the Edinburgh Medical and Surgical Journal,*

GENTLEMEN,

I SEND you the following case of osteosarcoma, drawn up by my very industrious and intelligent pupil, Mr Macdonald, who had charge of the patient. Although the disarticulation of the lower jaw has been repeatedly and successfully performed by that excellent surgeon, Mr Cusack of Dublin, yet in Great Britain, (at all events in this end of the island,) it has not been had recourse to, and therefore this case may perhaps be interesting to some of your numerous readers.—I am yours, &c. ROB. LISTON.

Catharine Hamilton, an unmarried woman, 30 years of age, was attacked in the beginning of October 1826 by pain in the right side of the lower jaw, which for sometime she thought arose from toothach, as she had from infancy been very subject to it. Swelling appeared in the part several weeks previous to this, but it did not particularly attract her attention till the pain supervened. She made use of different applications to it without any benefit; some of them indeed, such as warm fomentations, rather aggravated the pain than otherwise. She occasionally felt relief from gently tapping the cheek with her hand. The swelling gradually increased from her first observing it, and the pain continued with little intermission till the 22d of the following January, the period at which she first applied for advice. She stated that she had always been delicate and very nervous, but not subject to any particular affection, unless toothach and gum boils, from which she suffered very much. These were often accompanied by considerable constitutional disturbance. She had several gum boils in the situation of the present swelling. She remembered having received a severe blow over the same part of the cheek nine years before, which wounded the soft parts considerably, but she soon recovered from it. On examining the jaw a tumour was found under the middle grinders, externally of the size of a section of a walnut. It was as hard and as firmly attached as if it had formed a part of the bone. The circumference was not clearly defined, being gradually lost on the surface of the jaw. There was a smaller swelling immediately opposite internally. The soft parts over them had their natural appearance. The two hindmost grinders being decayed, were extracted, and, under the supposition that the disease was *spina ventosa*, a trocar was pushed in through the socket of one of them; nothing, however, came away but blood. After this the pain became extremely acute, and continued so for some days. A fortnight afterwards the same operation was performed more anteriorly, with a similar result. Some weeks subsequently to this she felt a lancinating pain in the cheek, which continued to return in paroxysms; and she became constantly subject to headach when she moved about or stooped down to do anything.

She went on this way till April, her symptoms becoming more and more troublesome. The tumour had by that time attained the size of a small apple; it occupied the whole breadth of the bone, rising considerably above the alveolar processes. Fungi began to spring up from the sockets of the drawn teeth; the internal swelling, however, continued nearly stationary. In this state of matters amputation of the affected portion of the jaw was proposed as the only means of relief from her symptoms, and she readily agreed to it. The operation was accordingly performed on the 15th, in the following manner:—An incision was made from the angle of the mouth to a little below the lobe of the ear, and another directly downwards, passing beyond the base of the jaw. The angular flap thus formed was dissected downwards, so as to lay bare completely the surface of the tumour and lower edge of the bone. The corresponding part of the surface of the bone internally being separated from its attachments with the lining membrane of the mouth, &c., a copper spatula was placed under it to prevent the saw from injuring the soft parts. The part of the jaw included between the canine tooth and angle of the right side was then removed by means of the saw and cutting pliers. The only artery requiring ligature was the facial. The bleeding from the artery of the bone was stopped by plugging up the opening with a piece of wood. Having ascertained that both ends of the removed portion of bone were perfectly sound, the cavity formed by the removal of it was filled up with caddis, and the flap turned up into its place, and retained there by interrupted suture and harelip pins. The wound healed up externally by first intention, and internally by granulation in the course of between three and four weeks.

For five weeks after the operation she could not move the tongue towards the right side, and had considerable difficulty of swallowing; her speech was also indistinct. She had no feeling in the lower part of the cheek for five months after the operation; it gradually, however, returned, and now, though not so perfect as on the other side, is nearly so.

In June she began to follow her usual avocations, and continued to do so till November, when she was suddenly seized with pain in the remaining condyloid portion of the jaw. Swelling appeared some weeks after this; and in a short time she had a return of her headachs. It was now evident to her that the disease had returned; but her dread of another operation was so great, that she did not make her case known till the beginning of March. The tumour was by this time as large as in the first instance; and the bone, from want of the usual movements of the jaw, had become so firmly fixed, that it was scarcely capable of being moved. The disease had gone on as before, with the difference, that she had no lancinating pain in it as in the former instance. As the left side of the bone and mental portion of the right appeared perfectly free of disease, the removal of the remaining part was proposed, and the necessity of immediate operation urged upon her on account of the rapid increase of the tumour. She at last agreed to it; and it was accordingly performed on the 16th. She was laid on a table, with her head resting on a pillow, as in the former operation. An incision was made from a little above the articulation of the jaw to about an inch below its angle, passing behind the edge of the bone, and another from the angle of the mouth towards the ear, till it met the former. The angular portions were then reflected, by which means the surface of the tumour was laid bare. After separating the bone from its attachments as much as possible, an attempt was made to force down the coronoid process from under the zygoma, by pushing the lower end of the bone backwards, in order to divide the insertion of the temporal muscle; but this proved ineffectual. The capsular ligament of the joint was then divided, and the bone with difficulty turned over from behind forwards: this required considerable force. It was then separated from its attachment underneath the coronoid process, pulled down from under the zygoma, and the temporal muscle last of all divided at its insertion. The bleeding was effectually stopped after the operation by passing a ligature under the common trunk of the temporal and internal maxillary arteries, no other requiring ligature. The angular flaps were then turned up into their place, and retained there by suture and harelip pins. Very little constitutional disturbance followed the operation. Her pulse never rose much above 100, and was always regular and soft. The wound healed up externally by the first intention, except half an inch of the transverse incision near the ear; this led to a large pouch, which extended an inch and a-half downwards and forwards from the ear, and communicated with the mouth by a small opening, through which a good deal of matter found its way. On the morning of the fourteenth day from the operation violent hemorrhage took place through the opening; and before assistance could be rendered her more than a pound of blood was lost. The pouch was freely divided along its whole extent, and filled up with caddis and dry sponge, which were retained in their place by a tightly applied bandage. This had happily the effect of completely stopping the hemorrhage, and preventing the recurrence of it. The part was dressed three days afterwards, and presented a healthy granulating surface. The communication with the mouth was shut up, which rendered her situation greatly more comfortable. The cavity, as well as a sinus that led from it under the zygoma, was soon filled up by granulation, and is now completely cicatrized.

For some time after the operation she complained very much of dryness of the right side of the mouth. She had no power of motion of the right side of the face. When she laughs the mouth is pulled over to the left side, but there is not the slightest motion of the right. The lower part of the nose is slightly pulled over towards the left side. She has lost the power of shutting the eyelid. When she goes to bed she pulls it down over the eye with her hand. During the day, in consequence of the continued exposure of the eye, she feels as if there were constantly a mist before it, and when she attempts to read or examine an object minutely, has a disagreeable feeling in it, as if sand or other foreign substances were in the eye. The sensibility is as perfect on the right side as on the left.

ART. IX.—*Account of a Case in which Hairs were passed along with the Urine, with a short abstract of similar cases published by former authors.* By JAMES MITCHELL, Esq. Surgeon, Royal Navy.

IN one of my late voyages to New South Wales as surgeon-superintendent of convicts, a prisoner of the name of Jellet applied to me on account of suffering at times very severe pain in the region of the kidneys, with loss of appetite, and febrile symptoms. He said that he had been subject to this complaint for many years, and had in consequence been frequently an inmate of the London hospitals, the last occasion being recently before his conviction. He had lived a very dissipated life. He also mentioned, that when he came on board he was almost free from his complaint, but that of late (the vessel being at this time about two months at sea) he had suffered much from painful spasms, attended with a discharge of gravel along with his urine. I desired him to bring me some of his urine, and on examining it found it of a thickish consistence and white colour, so as to resemble the *mistura cretæ.* The man was much emaciated, very diminutive in stature, of a pale, sickly appearance, and his body seemed deficient in nourishment. Finding that the urine he brought me continued for a considerable period to have the same appearance, and to deposit after a time a very large sediment containing *hairs*, I began to suspect he was playing me a trick. But, as on being strictly examined he constantly adhered to the declaration that the hairs were passed with the urine, I resolved to prevent deception, by causing him to make his water under my own eye into a bottle which I kept for the purpose in my own possession. I then allowed it to settle for some time and poured off the fluid. This process was repeated several times, till I had collected a large quantity of the powder, which was then dried and carefully examined. I found in it a considerable number of hairs, varying from half an inch to an inch and a-half in length, and of various colours, some of them of a vermilion hue. Before a powerful microscope they appeared smooth, and not serrated like those growing on the surface of the body ; but in other respects I could not discover any difference.

Having thus satisfied myself of the truth of the poor man's narration, I hastened to endeavour to relieve his sufferings. These I judged to arise from the passage of the hair and powdery deposit from the kidneys. As I considered the substance to be a compound of lime, I thought the best way to render its passage easy, and to correct the alkaline state of the urine, would be to give large doses of the citric acid ; and in order to allay pain and increase the quantity of the urine, I ordered opiates conjoined with the spirit of nitric ether and diluents. As it struck me forcibly that this alkaline state of the urine might be induced or aggravated by his living on salted animal food, I changed it for farinaceous substances. Under this treatment in a few weeks he improved much in health and strength ; the urine lost in a great measure its turbid appearance ; the attacks of pain became very trifling ; and the urine afforded little or no deposit, so that at the end of a six months' voyage I discharged him at the colony fit for duty, and free from disease. I have not been able to learn since whether he had any relapse. The acid and vegetable diet I continued to the end of the voyage ; but the opiates and nitrous ether were omitted in the course of little more than a month.

Although I consider it to be the bounden duty of both public and private practitioners to give to the world any extraordinary case that may come under their review, the circumstances and treatment of which may tend to relieve the distresses of mankind, yet I confess it never was my intention to publish this man's case, which carried so much of an air of the marvellous with it, lest I, who had so often doubled the Cape, might be accused of having availed myself of the traveller's license. Having lately, however, in the course of my reading, found cases detailed by the older authors in which hairs were passed along with the urine, I feel now no reluctance in coming forward, and thereby bearing testimony to the accuracy of their observations. One advantage resulting from such records as the present is the confirmation which they often give to the statements of ancient authors. It appears to me not only that these works are too much neglected, but likewise that we are too apt to refuse to put faith in the facts they relate, merely because parallel facts do not occur in our own day. Although there are obvious reasons for being distrustful of their inferences, I cannot see any reason for doubting *their* facts any more than for recording our own, in the expectation that posterity will believe *them.*

Although the passage of hair by the urine is considered a very rare phenomenon in the present day, yet it has been mentioned by the following authors, from whose writings I shall give some short extracts. Hippocrates mentions the case of hair generated in the kidneys.* Fabricius Hildanus records the case of a female who had pain in the kidneys, uterus, and bladder, attended with a discharge of hair with the urine; and how the disease was to terminate, and in what manner these hairs were produced, he seems quite at a loss to conceive, insomuch, that he exclaims, (and it would be well many physiologists were equally candid,) " *Qualis vero tandem hujus morbi futurus sit exitus, et quanam in parte corporis pili nascuntur,—Deo, qui scrutatur abyssum et thesauros illarum, qui mensus est mare et conceptum ejus, soli cognitum est.*" He also mentions, that when hair has come from the kidneys ulcers have generally been found in them. † Tulpius mentions the case of a person who had been afflicted for four years with a periodical discharge of hairs. ‡ Schenkius narrates the case of a man who passed by urine long, thick red hairs; also that of a female who passed hairs by the urine, the disease being attended with emaciation; and a collection of hairs was found in the bladder after death. He terms the disease *renum trichiasis.*[*] Horstius details a case of a woman where hairs came away with the urine; and on dissection after death they were found in the ovaries and uterus, even although impregnation had never taken place.[†] Mr Young, in a letter to Sir Hans Sloane, states the case of a woman, who, having frequently suffered from attacks of nephritis, was supposed to have laboured under ulcer in the kidneys, and who, after some doses of cantharides and camphor, discharged a large quantity of blackish gravel, and a white thick matter like bird-lime, containing within it a bunch of hair. This occurred several times.[‡] Mr Powell, in a letter to Sir Hans Sloane, mentions the case of a lady, who passed urine of the colour of whey, and with it hairs, which at times came away easily, at other times gave pain. Sir Hans Sloane, in answer to this communication, states, that he is quite satisfied these hairy excretions came from the kidneys; that he had seen several similar cases, where long hairs were passed, having beautiful colours when exposed to a prism.[§] Mr Knight mentions the case of a gentleman, who, in a fit of *ardor urinæ*, passed hairs and gravel along with his urine.[||] The passing of hairs along with the urine is also mentioned in the Ephemerides Naturæ Curiosorum.[**] Dr Clark of Edinburgh, in his Probationary Essay on the Morbid Anatomy of the Human Bladder, published in 1818, mentions an instance of an old man passing hairs with his urine at irregular periods. Dr Mason Good makes the following remarks in his Practice of Physic: "Of organized animal substances, hair, however, seems to be generated within the body more easily than any other substance, without having at least in many instances any apparent bulb or root to shoot from."[††]

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* Hippocrat. Lib. iv. Aphorism 76.

† Fabricius Hildanus, Cent. v. Obs. 51, p. 438.

‡ Tulp. Obs. Med. Lib. ii. p. 176.

Of the growth of hair in the internal parts of the body, there are various instances on record. Vesalius mentions that he found hair within the human mamma. Amatus Lusitanus narrates a case where hairs were found within the human tongue.[‡‡] Cases have been related where hairs were found in the human heart.[§§]

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[*] Schenk. Obs. Med. Lib. iii. De Urina, p. 567.

[†] Horst. Oper. Medic. Lib. iv. De Morb. Infim. Ventr. p. 261.

[‡] Philosophical Transactions, Vol. xxvi.

[§] Ib. Vol. xli. Part ii. for 1740–41, p. 699—703.

[||] Ib. Vol. xl. Part ii. for 1740–41, p. 705.

[**] Ephem. Nat. Curiosorum, Ann. 9, 10, Obs. 12.

[††] Good's Practice of Physic, Vol. v. p. 68.

[‡‡] Amatus Lusitanus, Cent. vi. Cas. 65.

[§§] Fabricius Hildan. Cent. v. Obs. 51. p. 439.

I will not attempt to expand this paper by noticing the several theories and conjectures which have been formed by authors to account for the formation of hairs in the kidneys; nor will I presume to give any conjectures of my own regarding this singular aberration from nature. My object has been merely to state the fact as it occurred.

I shall conclude by subjoining the analysis of the earthy deposit that came away with the hair, performed by Professor Turner of the London University. "It consists of the matter of fusible calculus, that is, a mixture of the ammoniacal magnesian phosphate and phosphate of lime; but the latter is in small proportion to the former. Before the blowpipe it is blackened slightly from the presence of a small quantity of animal matter, and it then fuses readily into a perfectly transparent bead."

ART. X.—*Thoughts on Quarantine and Contagion.* By THOMAS MASTERMAN WINTERBOTTOM, M. D.

QUARANTINE Establishments have been long considered to be great restraints upon commerce; but having been intended to preserve the public health, by preventing the introduction of foreign diseases, great importance has been justly attached to them; and if we allow this idea to be correct, we must also agree, that those who subject themselves in their commercial pursuits to quarantine delays must necessarily bear the penalty. But though prudence may forbid the abolition of quarantine, it may nevertheless be possible to permit an abatement of its extreme harshness, which would confer important benefits upon the navigator, the traveller, and the merchant. The subject has not been passed over without its due share of notice; but, as often happens in affairs of great importance, the consideration of it has given rise to two very opposite parties. One party, breathing the levelling principles of the day, attempts to tear away the mask, with which, in its opinion, the vain phantom, contagion, has so long terrified the world, and thus to overturn at once all quarantine establishments. The other party, equally violent, and still more clamorous, strains every nerve to secure the mask upon the idol, and even to add fresh terrors to the Gorgon's head. On which side truth is to be found, I dare not determine; but I feel a strong conviction, that, if the quarantine restrictions were at once totally removed, each party would for a time be able to produce triumphant proofs of the validity of its own opinion. Of this we have pretty strong evidence in the disputes which were so long and so warmly maintained in America respecting the origin and contagion of yellow fever.

The contagionists attempt to decide the matter at once, by simply asking any man if he would like to have the plague introduced into his family. The answer which may be expected to such a question will oblige him to acquiesce in the plain inference, that he must use prudential means, nor think any caution too great to prevent its introduction. But extreme caution may lead to error, and thus defeat its own purpose; for wherever great restraints are imposed, great inducements are offered to break through them. A quarantine, such as is enforced in times of alarm, is so grievously oppressive, that frequent instances occur of persons risking life and property to escape its rigours. Although I profess to be a contagionist, I am not an alarmist; and I sincerely rejoice that the public mind for some years past appears to be gaining rather more tranquillity on the subject of diseases called contagious. This tranquillity has not, in my opinion, been occasioned by the writers on our side of the question, but has arisen, partly from the more enlightened state of society, and partly from the very strong and conclusive arguments adduced by our opponents, the non-contagionists. Dr Maclean, a physician of much learning and experience, stands forth at the present day as the chief opponent of contagion, and though his doctrine is by no means novel, but has been entertained before by men of the highest rank in our profession, yet it has excited against him much clamour and undeserved obloquy.

My attention was drawn to the subject of quarantine during a voyage from Leghorn to England in the year 1822. The vessel left Leghorn the 1st of August with a clean bill of health, and after a voyage of nearly two months, the crew remaining in perfect health and having had no communication with other ships or places, she put into a port in the channel in consequence of adverse winds. During a week's confinement in port all communication was cut off with the shore. A boat attended daily to procure for us necessaries, and to carry on what certainly appeared to be a farce, though not of the most entertaining kind. The boat's crew did not object to receive bottles of liquor reached to them; and the newspapers, with which we had been politely supplied by the officer, were received by him, without fear or precaution. Letters were also taken, sometimes by a forked stick, but more frequently by the hand, which, for form's sake, were sprinkled with a little vinegar or salt water, and that only when in jest they were cautioned by our crew to use their expurgatory means. Before we reached the Downs a boat came along-side, which was immediately dispatched to procure a pilot, leaving one man with us. The man was ordered to remain in the weather main-chains, and by no means to board the vessel; but no sooner had the captain turned his back than he changed his cold situation for a warmer and snugger one in the half deck, where all the crew who could be spared from duty huddled round him to hear the news. After a few hours he quitted the vessel to carry plague and pestilence on shore. Having received a pilot, the vessel proceeded to Stangate Creek, where she was moored alongside an old man-of-war, used as a floating lazaretto. Here we remained a week unlading the cargo, and closely confined to the vessel, not being allowed to stretch our cramped limbs on the spacious deck of the vessel so close to us. As soon as the last package of goods was removed from our vessel, we were declared to be clean, and admitted to pratique. I then left the vessel, as did soon after the pilot, who had been upwards of ten or twelve days exposed to the effluvium of the hold, and, in affording assistance, had handled many of the suspected packages.

Our vessel's cargo was a mixed one, consisting of a large quantity of marble, which of course remained in the ship; of skins, chiefly lamb skins, inclosed in hogsheads; bales of silk; paintings, and various works of art; books; some bales of cotton, and luggage of various kinds; the whole of which was removed into the lazaretto. The bales of silk were inclosed in oil skins, covered with an outer packing, which last was alone removed. * The bales of cotton had merely the outer covering cut open in parts, which is also practised with regard to wool, two substances of which the contagionists stand in the greatest dread.

The above proceedings appeared to me to be very inconsistent, if not ridiculous. The vessel came from Leghorn with a cargo, chiefly the produce of Tuscany, where perfect health prevailed, in a degree at least equal to that of England. But, supposing the articles had not been of Italian origin, or had even been brought from a plague country, they could not have been landed at Leghorn without undergoing such an *expurgation* as must destroy the hydra, contagion, if it could be done by human means. If goods which have passed through one quarantine, and have not been subjected to a second infection, required a second purification, why should not a third be necessary, and what security have we that Italian silks and cottons, after passing the ordeal in Stangate Creek, do not require another before being displayed on the counters in Bond Street?

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* A late writer on the plague (Dr Enrico di Wolmar, Abhandlung ueber die Pest, Berlin, 1827,) observes, that, according to the common opinion, silk is by no means well adapted to propagate the plague, or at least much less so than porous bodies, such as wool, cotton, &c. This, however, Dr Wolmar, an ultra contagionist, does not think sufficiently proved. The work of Dr Wolmar, introduced by a short preface from Professor Hufeland, is extremely interesting, and contains his Remarks on Plague, made during the prevalence of four epidemics which occurred in a residence of fourteen years at Cairo and Constantinople. An English translation of the above work would probably not be unacceptable, as it is also interspersed with many curious remarks respecting the customs, &c. of the natives.

Notwithstanding the detention and inconvenience occasioned to all concerned in the vessel, one material circumstance, according to the contagionists, pregnant with extreme danger, was overlooked; that is, the foul linen and flannels, worn during the passage, and kept afterwards shut up in close chests, were allowed to be landed without the slightest notice. Here, according to their own notions, contagion of the most virulent kind was most likely to be generated, and of course to infect the unfortunate washerwomen. At Leghorn this would not have been permitted. I should suppose the crew of a vessel which had passed some weeks at sea in perfect health might be considered to have undergone a sufficient quarantine, and be allowed to land without further detention. At all events, there does not appear to be any just cause for detaining passengers. In my own case the confinement was of no importance, for, having laid in a good store of books at Leghorn, I was independent of time. If, however, these quarantine laws are really of such vital importance to the community, they ought to be enforced alike on all. Yet we know from the public prints that an order of council has annihilated all fear of contagion, and discharged from quarantine, almost immediately on her arrival, a vessel coming from an infected country. The late Sir Thomas Maitland, an officer deservedly in high esteem, and very strenuous in enforcing the rigours of quarantine, did not treat the regulations with much ceremony in his own case.

The origin of quarantine has been referred by many to the time of Moses; but although we are certain, from the Sacred Writings, that great lawgiver was well acquainted with the nature of contagion, yet his precautionary means were absolute seclusion from society, not quarantine, which signifies only a temporary confinement. Why the word *quarantine* should be used does not appear clear, because forty days is not the fixed and invariable period; for it varies in different places, and according to circumstances. In one country seven, in another forty, in another 100, and even 120 days have been fixed for the duration of quarantine. Mr Howard says that the natives of Zante, who during harvest go as labourers to the Morea, are subjected on their return to a quarantine of only four days. On the Austrian frontiers also the system is liberal, as introduced by

Joseph II. In Dalmatia,[*] when neither plague nor a supicious pestilential disease rages in any part of Turkey, persons coming thence are admitted without quarantine, either of their persons or their goods. But all foul linen, wool, rags, &c. which are not in daily use must be previously purified. All other goods are allowed a free transit, as soon as it is proved that no soiled linen or bed-clothes are among them. If the plague has appeared in a distant Turkish province, ten days' quarantine is fixed for persons and goods; but if it has appeared in a neighbouring province, then twenty days are required. A French writer informs us,[†] that in America the duration of quarantine varies in different places. At New Orleans it is not more than fifteen days; in Georgia and South Carolina it is also very short, and only applies to vessels coming from the West Indies, not to those coming from other parts of the union, even though the yellow fever should be raging there. In the Delaware the maximum is twenty days; at New York thirty days. At Boston also the same period is observed, and likewise at Philadelphia. Professor Schraud observes,[‡] that a physician sent officially to inspect the state of Pesth in Hungary, then affected with plague, though he staid there only three days, was obliged to perform a quarantine of six weeks on the Island of St Margaret before he could be allowed to return to Ofen.

All the nations of Europe have adopted quarantine regulations; for it is not true that they have been disregarded by the Dutch, though performed perhaps in a negligent and slovenly manner. Bradley [§] says on this subject, " the Hollanders followed our example in an extraordinary manner, having even ordered the burning of the very ships and goods coming from Marseilles." There is reason to suppose, moreover, that the government of the Netherlands has of late turned its attention very much to this subject. Professor Thuessink,[||] a very decided contagionist, in his work on the Contagion or Non-contagion of Yellow Fever, which was drawn up at the request of the society of the Netherlands, and published by order of the King, gives a very fair review of some of the chief writers on both sides of the subject, and concludes by giving his own opinion in favour of its contagious nature. Speaking of the contagious nature of plague, and in answer to

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[*] Bestimmung der Contumaz perioden an den Grenzen von Dalmatien. Med. Chirurg. Zeitung, 1822.

[†] Keraudren de la Fievre jaune, p. 47.

[‡] Geschichte der Pest in Sirmien.

[§] The Plague at Marseilles considered, by Richard Bradley. Lond. 1721.

[||] Untersuchung ob das gelbe Fieber ansteckend sey oder nicht. Bremen, 1823, 2. abth. 1825.

Dr Deveze's assertion, that plague is not contagious, after giving the common arguments for the opposite opinions, he continues, " why then does the disease prevail in Egypt and in Turkey, and why is it prevented from attacking our territories by the cordons of Austria and Russia, and the quarantines of France and Italy ?" Upon this subject the learned Professor makes many judicious remarks, which he concludes by saying, " Is it, therefore, advisable to follow the plan of Dr Deveze, and remove cordons of troops from infected places, disregard quarantine, and allow a free entrance to vessels from the infected harbours of America and Spain ? Have the English ever done this, they who so violently assert the non-contagion of yellow fever ? I do not know a single example of it, but I know that quarantine is most strictly observed by that nation, and the transgressors of it are liable to capital punishment. The French commissioners also, who have reported upon the writings of Deveze, Rochoux, &c., have not attempted to induce their government to relax their restrictions."—Page 129.

Even the doctrine of fatalism is not sufficiently powerful to prevent its followers from using cautionary means. According to Antes, Mussulmen perform a kind of quarantine in their own houses, or by leaving towns and betaking themselves to the country ; which would be done more frequently were it not for fear of the odious name of *Frank* being attached to them. Van Swieten likewise makes a similar assertion ; he observes, " *Prudentiores (Mahometani) tamen sub prætextu religiosæ peregrinationis, Mahometis nempe sepulchretum veneraturi, se contagii periculo subducunt.*" * Niebuhr † also says, the Mahometans taught by the experience of Europeans use precautions; and Dr Frank, ‡ a very accurate and diligent observer, remarks, that, when it could be done with safety, (without fear of being plundered), persons of every sect were accustomed to expose their goods, &c. to a free circulation of air, and especially when any one died of plague in the house. However tranquil and indolent they might appear, yet the furniture, &c. of the deceased was exposed to a free air in the portico. Dr Frank further observes, that in the plague of Ismael Bey, so called because it broke out in his palace and occasioned a dreadful mortality, § as soon as every individual in any house was dead, the Aga of the Janissaries, or chief of police, locked up the house until after the feast of St John, when upwards of 300 houses were opened, and the furniture exposed without any bad effects having arisen. This may also be considered as a kind of quarantine, or at least as a precautionary measure to prevent infection. In 1815 the plague raged with so much virulence at Constantinople, that the Turkish government had thoughts of restraining its ravages by quoting and publishing the passages in the Koran, in which caution is recommended in associating with sick people.*

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* Commentar. v. 158.

† Niebuhr Description de l'Arabie.

‡ De Peste Dysenteria et Ophthalmia Ægyptiaca. Auct. Ludov. Frank. 1820.

§ The household of Ibrahim Bey, surnamed the little, which consisted of at least 300 persons, including Mamalukes, black and white slaves, became affected with plague; and all of them, including the Bey, died, with the exception of one Mamaluke about sixteen years old, and a female black slave. Wolmar, 169.

The voluntary quarantine, or seclusion of Europeans in the East, in their own houses, during the prevalence of plague, is so peculiarly strict, that the door is closed against the entrance of the nearest relative. The first precaution used is to inclose a space before the outer door, having an entrance from the street, and on one side of the entrance, a grated window, with a shutter inside to observe or converse with such as stand without. From the house a chain is fixed to the latch of the temporary door to open it for those who have occasion to enter. Cords of hemp, flax, or cotton, are carefully avoided by every house in quarantine as being highly susceptible of contagion. One or more servants are appointed to remain outside the house, day and night, to make purchases, bring letters, and attend to other business. The charge of the house door is confided to a trusty, intelligent, and prudent servant, who must keep a watchful eye over the most minute circumstances. To him are entrusted the keys of both doors, fastened together by a chain, which he must wear suspended to his neck night and day. Behind the outer-door are placed two large earthen or copper basins and wooden casks filled with water, frequently renewed, and kept carefully covered. Into these are put, in order to purify them, the various articles of food, as flesh, fish, and vegetables. If any one knocks at the outer-door, the porter looks through the grated window, and if it be a servant bringing provisions, he is allowed to enter and deposit them in the water, when he must immediately withdraw. The porter, who had retreated about eight or ten feet, as soon as the door is shut, stirs the articles about in the water by means of a hook fixed to a long stick, and then places them all upon a table, to make an accurate search if *hair*, or any other substance susceptible of contagion, remains attached. If any suspicious substance be observed, the outer-door is immediately opened again, and the various articles are returned to those who sent them. Fowls in general are not received into houses holding quarantine. But if they be particularly wished for, the feathers are previously plucked off, and the fowl must be kept immersed in water at least a couple of days. Before being cooked, the fowl is held by a long hook over a strong fire to singe off every, even the minutest feather.

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* Schnurrer Die Krankheiten der Mènschen geschlechts, ii. 526.

Money sent to the house is first deposited by the person who brings it in a copper basin filled with strong vinegar. The purse must be carried back. The porter then carefully covers the vessel in which the money is deposited with a board, and after remaining there some time, it may safely be taken out, though as a further precaution it is first washed in clean water.

All dogs and cats are banished from the house, or if retained they are shut up in a secure place; for these animals are supposed to be extremely susceptible of plague contagion.

In the court is placed an empty fire-place, above which is fixed a kind of box, having a wire bottom and a moveable lid. All letters or papers brought from without must be unfolded by the person who brings them. The porter then places them, by means of a pair of tongs, in this fumigating apparatus, which is half covered by its lid. Underneath a pan of burning coals and juniper, or such like plant, is introduced. The papers after remaining thus smoked for half an hour, may be read with safety. It is more expeditious and convenient to hold the letters for a few minutes in vinegar, but the writing is apt to suffer by this mode.

A wood shovel, at least five feet long, is kept within the inclosure; this is used to give money to the out-door servants, to make their purchases, or to reach refreshments, such as coffee or chocolate, to those who come on visits or business and remain without. The cups, when emptied, are returned upon the shovel, and placed for some time in water. For such kind of guests a wood stool is also placed in the inclosure. It is a commonly received opinion that new baked bread, whilst still warm, is strongly disposed to attract contagion. The person who brings it is therefore ordered to place it upon the boards which cover the water vessels. When quite cool every loaf is carefully turned over with the shovel, to discover whether a thread, hair, or other substance capable of retaining contagion may not adhere. About noon, and again about sunset, some burning coals are placed in the open court, and aromatic plants, as rosemary, thyme, &c. are burnt upon them, or in defect of these, dried horse-dung is employed as a good antipestilential fumigation. If any infectious matters, such as paper, linen rags, &c. are thrown by the wind, or from the neighbouring houses, into the court, the porter must immediately seize them with the tongs and throw them into the fire.

Every window near the roof, or near those of a neighbour, must be carefully closed, in order that no animals nor even birds, particularly sparrows, may enter. The master has to keep a watchful eye over the servants and slaves in the house, lest they communicate with such as do not keep quarantine, and thus receive plague. Even children are to be closely watched that they may not receive or touch any thing thrown to them by children in the neighbouring dwellings. Persons who do not shave themselves, and have not a servant for the purpose, must allow the beard to grow during the whole quarantine. A barber must by no means be employed, as he would inevitably introduce contagion. Even if razors be sent out to sharpen, they must, when returned, be placed by the person in warm water. Those in quarantine must carefully avoid the noontide heat, and also the night air when moist. Moderation in diet is inculcated, and also to avoid every kind of excitement. If these precautions be scrupulously attended to, and not otherwise, Dr Wolmar, from whom this account is taken, assures us there is no reason to dread the plague.

The same writer gives an interesting description of one of these precautionary quarantines, which was interrupted in an extraordinary manner. In the Italian quarter at Kairo, the inhabitants of ten adjoining houses belonging to rich Damascus merchants, amounting, inclusive of slaves and servants, to 119 persons, agreed, during the prevalence of a violent plague, to associate together, and, to secure a free intercourse, doors of communication were broken through each house. The union of these rich mansions, possessing beautiful large gardens and courts, magnificent halls and fountains, with a select society of both sexes, which assembled at noon and in the evening to feast, and dance, and sing, and engage in a variety of other amusements, such as are described in the Arabian Nights, caused the time to pass in the most delightful manner, while the other parts of the town were suffering under the melancholy work of destruction. This paradisiacal life continued uninterrupted rather more than two months. Unfortunately, however, one morning, several purses of Spanish dollars were brought to one of the doors. A young man, in order to receive the money, opened the inner door, through which the messenger held the purses and poured out their contents. The young man began to count the money at once, but when he had counted about fifteen or twenty pieces, the merchant to whom it belonged, and who was standing by, ordered him to put it into vinegar, lest some matter susceptible of contagion, such as paper, cotton, &c. might adhere. This order was instantly complied with, and as a further precaution, the young man washed his hands in vinegar, after having thrown the money, by means of an iron shovel, into a vessel with vinegar. He went to bed quite well and cheerful, slept all night without waking, but in the morning found the bedclothes had slipped off him during the night. Feeling indisposed, Dr Wolmar was sent for, who found him affected with violent fever and headach. No streaks of blood, however, were perceptible in the eyes. He had no pains in his body, nor inclination to vomit, neither was his tongue foul. His skin was very dry; the complaint was therefore attributed to cold caught by the bedclothes having fallen off during the night, especially as at that season every one sleeps with open windows. Six ounces of blood were taken from his arm, in half an hour the fever quite ceased, and in the evening he appeared perfectly well. Early next morning Dr Wolmar found him in a profound sleep, from which he had difficulty to awake him. His eyes were immoveably fixed, in the inner angles appeared streaks of blood, the infallible signs of plague, and a bubo was also discovered in the axilla. Dr Wolmar now left the patient to the care of his mother, giving her a salve for the bubo, and some cooling powders, (composed of one drachm of nitre, twelve grains of camphor, and six grains of native cinnabar, divided into twelve parts,) one to be given every quarter of an hour. In consequence of this accident, all further communication ceased, and each family shut itself up at home.

Having sat upon the patient's bed before the nature of the disease was suspected, Dr Wolmar used every precaution to avoid contagion, by washing with vinegar and exposing his clothes to the open air; by shutting himself up in his room and avoiding all further intercourse, but in vain. On the 2d day at noon he was seized with violent headach, and observed the bloody streaks in his eyes. He immediately took a pound of blood from his arm, and two hours afterwards swallowed a grain of emetic tartar, which brought up a small quantity of mucus. After passing a dreadfully restless night, in the morning a sweat broke out so profusely as to drench the bedclothes; and this relieved every symptom of fever. Lemonade and biscuit were his only food and medicine, by means of which treatment on the sixth day, or the ninth from infection, his recovery was no longer doubtful. These two cases of plague were the only ones which occurred, though some others of the company had been with the young man before the disease was known.

Another instance is also given of plague occurring during quarantine. A Frenchman living near Dr Wolmar, having extreme dread of the plague, was one of the first Europeans who shut up his house; and during the continuance of the epidemic, he observed the utmost strictness in his family quarantine. Unfortunately in June, only a few days before the plague ceased, he imprudently exposed himself a long time to the sun on the roof of his house. On the third day after he complained of headach, and had a violent attack of fever, followed next morning by the appearance of a large bubo in his neck. On the third day of the disease green and black petechiæ showed themselves, and also some carbuncles. He died during the night in a state of complete stupor. In the first instance the young man recovered; and though he assured Dr Wolmar that he had observed nothing adhering to the money, yet the Doctor attributes his disease to contagion, introduced by *some thread* of wool or cotton adhering to the money, though too fine to be noticed. In the case of the Frenchman the most ingenious scrutiny could not detect the mode in which contagion had made its entrance, so strictly and exactly had every precaution been used. No other possible cause appeared except that of exposure to heat. So strongly indeed were the people of the house convinced that it could not possibly be plague, that they rejected the idea with indignation, until shortly before death bubo, petechiæ, and carbuncles, removed all doubts. This case rather militates against the security of quarantine. But further, Dr Wolmar is obliged to confess that in the caravans which in the midst of summer pass through the desert, travellers are not unfrequently seized with plague, though infected neither by the contact of persons or of goods. And those who travel from Suez or Tor, when the plague does not prevail in either of these towns, frequently sicken from mere exposure to the sun, and have genuine bubos and carbuncles. It may be remarked, however, that in such instances the disease does not communicate itself to others in the caravan; neither does the violent fever which often seizes travellers ever partake of a pestilential nature when the plague is not raging. But during the plague or epidemic season no other acute fever shows itself, except plague; therefore every one who is suddenly attacked with fever at such times must be treated for plague. *

The first authentic trace of a quarantine establishment, such as we now have in Europe, is that founded during the prevalence of plague in 1423 by the Venetians upon a small island, that of St Lazaro, about two miles from the city of Venice, which until that period had been appropriated solely to the reception of lepers. The same measures were resorted to in 1448, when the plague broke out a second time in Venice, and diffused itself very extensively. † According to Gratiolo di Salò, in 1485, a council of health, consisting of three persons, (Proueditori alla sanità), was established in Venice, which set apart the above named island for the reception of all suspected plague cases that might come to the port in foreign vessels; and as subsequently both ships and goods were detained there, in this manner the first sea quarantine gradually arose. The former Lazaretto being thought not to answer fully the purpose intended, in 1468 a second one was formed upon an island almost twice the distance of the former from Venice, and called the new Lazaretto. At first the period of detention was fixed to twenty-two days, but various changes were made afterwards in the time, until at length forty days were fixed for passengers, goods, and the crews of infected vessels.

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* Wolmar, Abhandlung ueber die Pest. 190.

† Locatelli observes, "La Peste di Venetia l'anno 1438 sotto il principato di

The Mediterranean quarantines being placed nearest the seat of danger may be expected to be the most strict, and among these Leghorn is peculiarly so. It has, however, been so particularly and so well described by Dr Granville,* that it may be passed over here. The quarantine establishment at Marseilles, one of the strictest in Europe, has also been already noticed by the excellent Mr Howard; but the following description of it by Professor Fischer of Wurtzburg, who resided at Marseilles during part of the years 1803-4, will best convey an idea of its extreme rigour. It is scarcely to be wondered at that the inhabitants of Marseilles, seeing they have suffered so dreadfully from plague, should stand in such excessive terror of the disease, and should enforce the expurgatory means with inquisitorial severity, and with a degree of mysterious secrecy, which has induced the learned Professor to style them "die höchst geheim gehaltenen Quarantaine Reglements." †

All vessels coming to Marseilles from the Levant are obliged to perform quarantine at the Island of Pomeques, some miles distant from the town. It depends upon the port the ship

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Francesco Foscarini, nel qual tempo il Lazaretto vecchio fù ampliato con molte camere ed fabricato un altro nuovo, fù sanata con li Fuochi acesi de Notte per la città con varii odori per alterar l'aere." *Trattato sulla Peste.* Gratiolo di Salò corroborates the above account in his *Catalogo delle Peste piu notabili*, adding that the new Lazaretto was "molto magnifico: Il quale à chi lo vede di lontano ha forma d'un castello molto ben guernito," p. 128. In 1474, a very strict quarantine establishment was appointed in the Island of Majorca, of which Dr Lucian Colomines was Medico Morbero. *Schnurrer chronik der Seuchen*, p. 16.

* Letter on Plague and Contagion. Lond. 1819.

† The extremely secret quarantine regulations.

The plague of Venice in 1483, during the administration of Fr. Foscarine, at which time the old Lazaretto was enlarged with many chambers and a new one built, was cured by fires lighted through the city at night, with various odours to improve the air.

Gratiolo di Salo, in his Catalogue of the most remarkable plagues, adds, that the new Lazaretto "was very magnificent, and, seen at a distance, had the appearance of a well fortified castle."

sailed from whether she is to receive a *patente nette* or *touchée*, *patente soupçonnée*, or *brute;* or, as we term it, a clean or foul bill of health. *Patente nette* is given when the state of health is perfectly satisfactory, and without the smallest apprehension of plague; *patente touchée*, when the health continues equally good, but the vessel has come from a suspicious port, though no sickness prevailed there; *patente soupçonnée*, when a malignant epidemic disease raged at the place, or that some communication by means of caravans had occurred with another place in which the plague actually existed. *Patente brute* was given when the plague had appeared in the harbour, or in the neighbourhood of the lading port, and the vessel had goods from these places. Vessels with a *patente nette* or *touchée* are allowed to anchor in the harbour of the island; but with a *patente soupconnée* or *brute*, they must proceed to a small bay on the north side of the harbour called *la grand prise.* All letters must be given up. Those for government, or persons of rank, are only smoked; those for merchants are dipped in vinegar and cut open at the sides to detect patterns of silks, cloths, &c. if inclosed. The duration of quarantine is fixed by four circumstances; the bills, the cargo, the lading port, and accidents which may have occurred during the voyage. The cargo is divided into articles susceptible of contagion and articles unsusceptible. Of the former the chief are wool, cotton, hemp, flax, hair, silk, linen, cloths, sponge, peltry, dried skins, leather, books, parchment, feathers, ornaments of gold, fresh flowers, baggage, untarred ropes, &c. The unsusceptible are coffee, spices, tobacco, fresh skins or hides, wax, ivory, rough coral, oils, minerals, salted meat, dried fruits, corn, and all kinds of pulse, oil, wine, liquors, and in general all fluids, wax, tallow, tarred ropes, &c.

The period of quarantine proceeds, in a certain gradation, from twenty to forty days, which in particular cases is preceded by an airing of the cargo on board for fourteen days or three weeks. All vessels from Constantinople, Smyrna, and the harbours of the Black Sea, whatever the cargo may be, are considered to have susceptible goods on board, and therefore obtain *patente brute.* Vessels which sail from a port sixty days after the cessation of the plague there have *patente brute;* if from sixty-one days to seventy after the plague has ceased, *patente soupçonnée;* if from seventy-one to eighty days after, *patente touchée;* but if it be eighty-one days after the plague has ceased, they receive *patente nette.* If boarded on the passage home by an African cruiser, the bill of health is stained with this distinction; if the plague raged at the place which the cruiser came from, a *patente nette* is changed to *patente brute;* but if the plague did not prevail there, the patente becomes only *soupçonnée.* If, however, after the visit of the *barbarian*, the vessel remains at sea forty days without sickness or death, the original patent is retained, but, by way of precaution, the vessel is placed for ten additional days *à l'observance.*

Passengers are sent to the Lazaretto, and have their effects placed *en purge* in an open gallery. Animals with long hair undergo a species of quarantine, but short haired animals are only made to swim ashore; fowls, parrots, &c. are merely sprinkled with vinegar and become clean. The ventilation of goods is divided into *la petite sereine*, which lasts from nine to fourteen days; and *la grande sereine*, from fourteen to twenty-one. If a passenger should require surgical assistance, the surgeon must submit to the same quarantine. The slightest febrile symptom is noticed, and if the case appears dangerous, it is carefully concealed from the other persons in quarantine. If the patient wishes to confess, the priest enters the room alone, and must stand in the corner opposite to the patient. Absolution is given without the usual laying on of hands, nor is extreme unction or the viaticum administered. Passengers having a *patente nette* are allowed to leave their room immediately, and have a place appointed for them to walk in; but with any other *patente* they must be confined to their rooms during the first sixteen days. When the priest leaves the room, he must swear upon the cross that he has not touched the patient. Should the person die, the body is drawn from the bed by means of hooks into a low kind of bier, and taken during the night to the burying ground. The death is either kept a profound secret, or is ascribed to some accident, apoplexy, &c. Having suffered the necessary detention, and all the concomitant plagues, the *jour de grace* arrives at length, but another ordeal still remains. * The crew of the vessel, and the passengers in the Lazaretto, undergo a strict examination from the officers of health, previous to being exposed to a fumigation in a close place. † This is produced by burning old mats, oakum, leather, and wet straw, which occasions a dense and very offensive smoke; or, as Dr Fischer expresses it, "*einen wahrhaft hôllischen gestank*," (a truly hellish stench.) The ship's sails are dipped in the sea, and then the *libre entrée* or *pratique*, is permitted to all that have been confined.[*] In some ports, if the plague has broken out on board the vessel previous to coming into port, an inhuman law exists to prevent her entrance, and oblige her to put again to sea. It would be more humane to shoot the crew and sink the vessel. This is not the law at Marseilles. A longer quarantine, however, is required in such cases; eighty days for the vessel and people, and one hundred for the cargo. Holes are made in the ship's sides, in which ventilators are placed. The clothes, &c. of those on board are dipped in the sea once in twenty-four hours and dried upon the deck. Great caution is also used in such a case to keep the whole transaction secret, so that nothing may transpire in Marseilles. The sick or suspected are removed into the small Lazaretto, *enclos de St Roche*, where they are as completely isolated in their apartments as if buried alive. Food and medicine are reached to them in baskets fixed to a pole, and the physician and surgeon who visit them are separated by a grate. If the patient be restored to health, which is not considered to be the case until the bubos or carbuncles be cicatrized, he must begin a new quarantine of eighty days, and not leave his room until the fiftieth or sixtieth day. If he dies the body is buried with great secrecy in a grave, which is filled up with quicklime, and which must not be opened again for thirty or forty years. Every article of furniture in the room which he may have touched is burnt. While such patients are confined, no others who are in quarantine are allowed to leave their rooms; and the guards and persons employed in burying the body, burning the furniture, and cleaning the room, must undergo a quarantine of eighty days.[†]

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* On Quarantine, see Omodei Annali di Medicina, Vol. xxiii. p. 356–7. Also the valuable work of Dr Hancock on this subject.

† Upon this subject Desgenettes remarks: "Je désirerois seulement qu'on supprimât la cérémonie puérile et illusoire du parfum la veille de la sortie, et qui consiste à enfumer les personnes en brulant une botte de foin. Il ne faut pas qu'un etablissement aussi utile puisse fournir matiere à aucun ridicule."—"I wish they would suppress the puerile ceremony of fumigation the evening previous to their departure, which consists in burning a bundle of hay. So useful an establishment ought not to afford matter for ridicule." P. 242.

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[*] In a small work published at Hamburg in 1794, Gedanken ueber Quarantaineanstalten ueberhaupt, und insbesondere ueber die Hamburgischen. (Thoughts on Quarantine Institutions, and particularly those of Hamburg) It is said, page 31, according to a law made, September 9, 1771, and still in force, at least unrepealed, a vessel from Smyrna with *susceptible* goods on board cannot be allowed to enter the port; and again, page 37, if plague should break out on board a vessel during quarantine, that vessel must be sent again to sea. The practice, however, is not approved of by the writer; for, he observes very justly, they might be induced by despair to land unobserved.

In 1804, two vessels from Malaga with passengers, one of which had been forty the other seventy days at sea, were not allowed to remain at Villa Franca and at Nice, but in a very short period obliged to put to sea again. Kritische Beleuchtung und Wuerdigung der europaischen Pest Krankeiten von G. F. Sick. 1822.

[†] To such treatment may be applied the words of Cælius Aurelianus, "hi ægrotantem destituendum magis imperant, quam curandum." De Elephantiasi.

No precautionary means were used in England to prevent the spread of plague until 1604, when James I. ordered that those sick of that disease should be secluded from society under severe penalties. The first quarantine laws in this country were passed in 1709 in the reign of Anne, which were more strictly enforced in the succeeding reigns. Mr Pepys, in his Memoirs, (Vol. i. 265) notices an attempt to introduce quarantine in consequence of the plague increasing so much at Amsterdam and Hamburgh in 1663. " We are going," he says, " upon making of all ships coming from thence (Amsterdam) and Hamburgh, or any other infected places, to perform their quarantine (for thirty days, as Sir Richard Browne expressed it in the order of the council, contrary to the import of the word, though in the general acceptation it signifies now the thing, not the time spent in doing it) in Holehaven,—a thing never done by us before."

If we compare the various periods of quarantine observed by different nations we must feel surprise at their diversity. How a certain period of time came to be fixed upon, whether it was founded upon some rational principle derived from experience, or merely empirical practice, does not appear evident. No satisfactory reasons are adduced whereon to found the law which professes to give security by a certain definite period of detention. Indeed the difference in the practice of quarantine is so considerable, that we might naturally enough be led to suspect caprice to be one of the chief actors in the drama. Even at the same place the practice has fluctuated greatly. At Hamburgh, in 1744, the ship De Vink arrived from Smyrna laden with cotton, and having a clean bill of health. The crew was subjected to fourteen days quarantine. No notice is taken of the ventilation of the cargo. In 1745 ships coming from suspicious ports, but with a clean bill of health, were subjected to fourteen days quarantine. In 1746 ships from the Levant, with a clean bill of health were admitted *without* quarantine. In 1748, a vessel (captain's name Lühring) was admitted without quarantine, though the cargo had been collected in various ports of the Levant. During the same year two vessels with wool came to Hamburgh from places actually infected. They were not allowed to enter, but their cargoes were unloaded, put into other vessels, and sent to Marseilles. It would be highly satisfactory to know how the persons employed in discharging this very alarming cargo escaped. Had an explosion happened, no doubt it would have been chronicled; but the probability is, that the wool was quite clean. At the same place, in 1749, a vessel, (Captain's name Bulle,) arrived with an *unsusceptible* cargo (it consisted in part, however, of Morocco leather,) from St Crux and Saffi, where the plague had not entirely ceased. The outer packing *(emballage)* was burnt; the crew subjected to fourteen days quarantine, after which the vessel was released.* The regulations at Marseilles, in as far as they concern the crews and passengers of vessels, seem wonderfully well calculated to occasion sickness. Men who have been sixty or seventy days, or perhaps more, tossing about at sea in a leaky vessel, not uncommonly short of provisions, find, on arriving at their port, that they must go to jail, and have a close confinement for at least *one* sixteen days. Among these persons there may chance to be a hypochondriac, whose disease the sea has always a tendency to increase. He is cooped up in a small, dirty,† uncomfortable apartment, of itself sufficient to depress his spirits, and with the additional dread of having his confinement almost interminably prolonged by the appearance of any febrile symptoms in himself or his companions. The wonder here must be, how he can possibly escape indisposition.

The contagionists inform us, that contagion is of a viscid nature, and capable of attaching itself to various hard bodies, but to wood with such peculiar avidity that a common ventilation is insufficient to destroy it without the aid of fire or water. They do, however, allow that even the floor of a pest hospital may be cleansed by very careful washing. This may encourage us to hope that the skins of men, however filthy, may be thoroughly purified by a well-conducted series of warm baths during a few days, aided by abundance of soap and of sand, if thought necessary, and that this, when sickness has not appeared, may be a sufficient quarantine for all passengers.‡ Ten days are in general a term sufficient for contagion to show itself in ordinary cases of infection; but to this must also be added the time spent at sea in health, which will probably make a much longer period than any contagion we know of can remain unnoticed in the body, with the exception of the hydrophobic.

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* Gedanken ueber Quarantaine-anstalten, insbesondere ueber die Hamburgischen, 1794.

† Well described by Mr Howard in his account of Lazarettos. The horror of these places among the French in Egypt seemed, according to Pugnet, to increase the terror of the plague. The order for the soldier to be taken there appeared to be a sentence of death. "Nous ne l'avons jamais vu y entrer sans démêler chez lui une vive émotion, à laquelle succédait bientot l'aliénation de toutes ses facultés intellectuelles."—"We never saw him enter there, (the Lazaretto,) without a most lively emotion being excited in him, soon followed by the alienation of all his mental faculties."—*Pugnet*, p. 178

‡ See Howard on Lazarettos. Pugnet remarks that they very seldom subjected to quarantine (d'observation) those who had associated with infected persons. Causing them to plunge into the Nile was thought sufficient. Washing, exposing to heat, or to the air, the clothes of such persons, never deceived their expectations. Mem. sur les Fièvres de mauvais caractére du Levant, 181.

Wool and cotton from the Levant are the two substances most dreaded by contagionists, and with justice; for if contagion adheres so strongly to the floor and walls of a room as to require scraping and washing, it appears next to impossible to remove it by mere exposure to air when introduced into those porous substances. It seems, indeed, as if the contagion of plague resembled the dormouse, in liking to nestle comfortably; for Ramazzini[*] assures us, "*Pesti enim volupe est, in lana molliter cubare.*"

Bales of cotton for the convenience of carriage and stowage are compressed into as small a space as possible, and thus form a dense mass impenetrable to air. Even when brought from infected places, it does not follow that every bale in a vessel's cargo is infected; for persons sick of the plague are not likely to be employed abroad picking cotton; neither is it kept in private houses before it is shipped. Perhaps one bale in the whole cargo is infected. How is it possible to distinguish that bale? But perhaps only a single lock of cotton is infected; and this, we are assured, is quite sufficient to contaminate a whole bale.[†] If we can imagine such to be the case, is it consistent with common sense to suppose that the mode of purification used in quarantines can be of any use? If, as some pretend, contagion be of a highly volatile nature, and easily dissipated by exposure to air, yet to produce this effect every individual bale ought to be opened and spread out, so as to be really exposed to the atmosphere,—an operation which it is ridiculous even to think can ever be put in practice. The whole expurgatory practice consists in opening the ends of the bale, and causing a man to thrust his naked arm into it; more cannot be done; neither time nor space sufficient can be allowed.[‡] It is not improbable, indeed, if a piece of money was known to be concealed in each bale of cotton, that very few bales would escape a complete rummage; but having no such inducement, not much time is wasted in so useless a manner. If, according to the opinion of others, contagion be of a viscid nature, nothing less than soaking the cotton in water could destroy it. Professor Hartmann, (*die Theorie des Ansteckenden-Typhus, p.* 76,) thinks the viscid nature of contagion is fully proved by the "tenacity with which it adheres to the clothes, beds, and

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[*] De Contagiosa Epidemia. [†] Bach, 193.

[‡] Upon this subject Dr Lange remarks, "Vidi enim ipse sæpe, vidit Chenot, viderunt et multi alii plenariam purificationem rerum infectarum impossibilem esse. De Peste, 31.

and furniture of the sick and convalescent, and even to the smoothest bodies." But if this were actually the case, it appears self-evident that no exposure to air could possibly remove it from its attachment to porous bodies. It is true, indeed, no ill effects are experienced in cargoes supposed to be infected, after the usual mode has been practised for a proper time; but the probability is, that the cotton, when placed in quarantine, was as harmless as when it came out, and perhaps somewhat purer before the dirty sweaty arms of the expurgators were thrust into it. In the cargo of a vessel, perhaps not one-twentieth part of the cotton is subjected, or can possibly be subjected, to a satisfactory ventilation, and it cannot happen otherwise. Either the mode of purification, therefore, ought to be improved, or the practice abandoned as totally inefficient. Many writers of considerable note, and well acquainted with the subject, have blamed the excessive delays of quarantine, and have recommended the period to be shortened. Dr Martin Lange,* a friend to quarantine, observes, "*reformidanda nimis longa quarantæna.*" Chenot likewise does not see any reason for fixing quarantine at forty days,† but thinks the contagion, when introduced by strangers, shows its activity in a much shorter time; and in suspected cases by using sudorifics, warm baths, and change of clothes, during seven days, they may be returned to society, if previously no disease occurs. It may further be remarked, that quarantines have in many instances proved ineffectual. Foreigners pay this country the compliment, of asserting that it has the worst quarantine establishment in Europe; but, bad as it may be, they can bring forward no serious instance of failure. This cannot be said of Marseilles, Leghorn, or even of Malta; but a single instance of the insufficiency of quarantine in a country where it is exercised with unusual severity,* may be a sufficient proof. Orræus,† a much esteemed writer, declares, that though quarantines were established, and strictly observed on all the public roads, adds, "*sed successus votis non respondit! Pestis namque, intacta in itinere, magna, urbium et villarum serie, in meditullium imperii, metropolin puta Russiæ antiquissimam, Moscuam, furtive plane immigravit.*" The inference is, that the more rigorous and oppressive the restraint is, the greater is the danger. The account of the plague of London, written, as supposed, by Defoe,‡ either as an eye-witness, or from hearsay, is, like all his writings, extremely interesting, and clearly proves that the compulsory shutting up of houses always increased the mortality; but when voluntarily undertaken, as on shipboard, and by the Dutch merchants, whom he compares to "little garrisons besieged," it was always found useful. Dr Hodges § also observes, many sick might have been saved, had not the tragical mark upon their door (the red cross) || drove proper assistance from them." This was confirmed also by other pestilential contagions, "which did not cease until the doors of the sick were set open, and they had the privilege of going abroad." It was always found useful to allow those in health to quit an infected house; and by thus removing from unhealthy to more healthy spots, during contagious diseases, the complaint was not spread.¶

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* Rudimenta Doctrinæ de Peste, p. 96.

† Chenot, p. 196, 208.—Von Rosenstein supposed contagion could not lurk in the body longer than seven days, therefore he wished to restrict quarantine to twenty days or even to fifteen. Lange (de Peste) observes, "Kælcserus non ultra tres dies idem (contagio) in corpore delitescere asserit," p. 7. Joseph II. restricted the quarantine in Transylvania to seven days. But it must be confessed that our observations respecting the time contagion may remain inert in the body are but few and defective. The following case may tend to show how long marsh miasma can remain dormant. A person who had resided a few years on the coast of Africa, and had occasional attacks of remittent and intermittent fever, landed in perfect health at Bristol in June 1796, after a passage of forty-six days. The day was fine, but rather cool. Leaving the ship in King Road, he proceeded, in a boat, at low water, up the narrow channel of the Avon, bordered with lofty mud banks, to a place called Lamplighter's Hall. The wind blew cold from these banks, which emitted also an unpleasant smell. The person felt almost immediately a chillness not amounting to rigor, which was succeeded by an excruciating headach. After continuing about three hours it ceased as suddenly as the explosion of a pistol, leaving him in perfect health. No suspicion was entertained at the time respecting the nature of the disease; but on the 10th day a regular cold fit, followed by heat and sweating, showed the attack of an intermittent, which proved to be a tertian. Here the contagion or miasma remained latent about nine days. That the ague was produced by marsh effluvium, and not by a relapse of former attacks of ague occasioned by cold, seems probable, because the person laboured under none of the sequelæ of ague, nor was an intermitting habit formed in his system, having always checked the remittent, as well as the intermittent, attacks very speedily by the liberal use of bark; add to this, he had not experienced a fit of illness during the last fourteen months of his residence at Sierra Leone.

Upon this obscure subject some satisfactory evidence might be obtained, if government would command every quarantine establishment to give well attested returns of the number of cases of sickness and death which have occurred among them during the last forty or fifty years, and order them in future to be continued annually.** If, during every three or four years of

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* Langermann speaks of the "inexpressibly rigorous quarantine regulations of Russia, which are more severe than the plague itself."—Ueber das Gelbe Fieber, &c. p. 193.

† Gust. Orræi descriptio Pestis quæ anno 1770 in Jassia, and 1771 in Moscua grassata est, p. 24. Samoilowitz and De Mertens are very anxious to point out the mode of its introduction into Moscow, but evidently without success.

‡ Page 66. § Loimologia, p. 9.

|| Mr Pepys speaks of "this disease making us more cruel to one another than we are to dogs," p. 362.

¶ The account of the plague of London attributed to Defoe. Hodges in his Loimologia, and Orræus, p. 7, give as lively a picture of the horrors of a town devastated by plague as can be conveyed by words.

** Hancock on the Laws and Phenomena of Pestilence.

the above period, only a few cases of disease from each establishment, decidedly contagious, be brought forward, produced in the expurgators by the ventilation of foul cargoes, the utility of the institution in protecting the country from danger will be fully established. At Malta, indeed, we are informed no accident from such a cause has occurred during the last fifteen years or more, which is the more extraordinary, as it is placed so near the source of contagion; and Jansen asserts, *(Brieven over Italien door W. X. Jansen. Leiden*, 1790,*)* that in the Lazaretto Sporco at Trieste, no instance of infection had occurred for sixteen years. (Schnurrer, p. 259.) But to avoid a partial view of the subject, the report should be general. Even bills of health are not always to be depended upon.* A highly respectable captain of a vessel assured me, that a few years ago, when the public mind in this country was in great dread of yellow fever, he sailed from New York with several passengers; when he departed, the yellow fever raged so violently in New York, that communication was cut off with some parts of the city, yet he brought with him a clean bill of health, and landed his passengers at Dover, without any notice being taken.

The stories related by old writers respecting the dreadful effects of contagion are so marvellous, and so repugnant to common sense, that after the first emotions of terror subside, it is natural for a person to ask if such things can possibly occur without a change (being produced) in the usual course of natural events. Much good has accrued from such inquiries, though they appear to have produced a tendency towards a dangerous extreme,—the denial of the existence of contagion.† The extreme dread of the introduction of yellow fever into this country, as well as the belief in its contagious nature, have in a great measure happily ceased. Our precautionary measures are now chiefly directed against plague; a disease not very likely to be again introduced into this country, or which at least, in consequence of our change of habits, greater cleanliness and attention to ventilation, is not very likely to spread. If, therefore, trusting to the mass of evidence brought forward by respectable writers, we could so far control our excessive fears as to relax the quarantine restrictions with regard to vessels and their cargoes, and abolish them in favour of passengers arriving in good health from a long sea voyage, it would afford a great relief to commerce.

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* Captain Chataud had a clean bill of health from Seyde, Tripoli, and Cyprus, though he had the plague on board his ship when he arrived at Marseilles. Mr Pepys in his Memoirs (Vol. i p. 269,) with his usual good sense, gives their proper value to these bills of health; speaking of "an agent from the King to Legorne and thereabouts, to remove the inconveniences his ships are put to by denial of pratique; which is (he adds,) a thing now a-days made use of only as a cheat, for a man may buy a bill of health for a piece of eight, and my enemy may agree with the intendant of the Santè for ten pieces of eight or so, that he shall not give me a bill of health, and so spoil me in my design, whatever it may be." The venality of the office of health (La Sanita) of Syracuse was proverbially noticed in the Mediterranean, yet the plague has not been there since 1743, though every vessel coming from the East might land there at the expence of only a few dollars.—Schnurrer, ii. 297.

† See Dr Bancroft's excellent work on Yellow Fever; Bouneau et Sulpicie Recherches sur la Contagion de la Fievre jaune; but in particular, Matthæi untersuchung ueber das gelbe Fieber, which contains an analysis of every thing written on this subject. In Hufeland's Bibliothek. d. pr. H. K., it is said, "this work, printed with English elegance, does honour to the author and to German literature." It gained the prize from the Medical Faculty of Berlin, against seventeen competitors. Six of these Dissertations were written in German, seven in English, four in French, and one in Latin.

It has been the opinion of many judicious writers, that the ancients were totally unacquainted with the doctrine of contagion; and Dr Adams, [*] speaking of their great dread of poisons, adds, " they were free from many of those apprehensions concerning contagion, which have detracted so much from the peaceable enjoyments of the moderns." This opinion, by no means modern, has been considerably extended by a very intelligent writer of the present day, [†] who attempts to prove, that the doctrine of contagion does not reach further back than the year 1547, [‡] the time of the removal of the Council of Trent to Bologna,—adding, that it was a farce enacted by Fracastorius and the Pope Pius III. who conjured up a malignant spirit to terrify into obedience a set of refractory people.[*] But that the ancients did actually believe in the existence of contagion, and even entertained very nearly the same opinions which are now held, has been most satisfactorily proved by Dr Marx in his very elaborate work on this subject.[†] The learned author, in support of the antiquity of the doctrine of contagion, has brought forward such a vast number of clear and decisive quotations from various writers of every class, as to render it doubtful whether most to admire his industry or his erudition. A single quotation from one of the oldest editions of the great Roman satyrist will show how accurate his notions were on this point:—

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[*] Observations on Morbid Poisons.

[†] Maclean on Epidemic and Pestilential Diseases. London, 1818; also Paskal Jos. Ferro, von der ansteckung der Epidem. Krankheiten.

[‡] The present doctrine, however, of contagion and of quarantine is very clearly and briefly expressed by an Italian writer of a prior date to that stated by Dr Maclean. It is there said, " Chi non hauera a çuersare con li infecti, fugga ogni conversatione perche cosi facendo sara molto piu sicuro non cognoscendo lo inimico ne potendose vedere; ma habbia opinione che ogni homo li sia inimico e ammorbato." " He who has no need to associate with the infected must avoid every approach to conversation, for doing thus he will be much more secure, not knowing or being able to see his enemy. Let him think every man his enemy, and diseased." Omodei speaks of this author as a celebrated writer named Baverio or Baviera, noticed by Beroaldo, " tamque Æsculapius colebatur, consulebaturque in medicinæ disciplina; cujus decreta oraculis veriora existimabantur." Omodei had not been able to obtain this work, but gives the title of it as printed at Bologna in 1478. In a small work, with the perusal of which I was favoured by Professor Duncan Junior, the title noticed by Omodei is prefixed to the head of the first page; " Regimento degno e utilissimo come l'homo si debbe gouernare e preservarse nel tempo de la Peste,"—" a useful regimen for a man to observe, in order to protect himself during the time of plague." The title-page of the book is ¶ Tractato mirabile contro de la Pestilentia. Composto per il famosissimo et excellentissimo Doctore Maestro Bauera, nobile Bolognese; a satisfatione de li poueri homini. At the end it is said to be ¶ Impresso in Perusia nelle Case de Hieronymo de Carthulariis. Adi. 15, de Genaio, 1523, and is probably a reprint of the Bologna edition. The work consists of 28 pages in 12mo, and gives very precise rules during each day ot the week, for regimen and diet, whilst the pestilence continues. His advice to the physician before he begins to visit his patients in the morning deserves a place in the golden rules of Pythagoras, " purgare e procurare chel corpo suo sia netto si de peccati come de catiui humori,"—" to purge and strive to render his body free from sin as well as from bad humours." In a letter from Sir Thomas

> ———————— dedit hanc Contagio Labem :
> Et dabit in plures ; sicut Grex totus in Agris
> Vnius Scabie cadit ; et prurigine Porci :
> Vnaq. conspectum Livorem ducit ab una.[‡]

The commentary also, too long to be inserted here, proves that the effects of contagion were understood at that time. Eusebius,[§] who wrote 340 years after our Saviour, describing the terrible plague which raged at Alexandria, very clearly proves the dread entertained at that time of contagion. The Christians, he says, animated by religious faith, exposed their lives with cheerfulness in ministering to the sick, though fully aware that *they were drawing the disease from those whom they approached to themselves.* την νοσον εφ᾽ εαυτους ελκοντες απο των πλησιον. Upon the pagans the dread of contagion produced an opposite effect ; terrified at the sight of death,

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More to Erasmus during the prevalence of the sweating sickness in England, he says, " minus periculi in aëre quam in urbe esse."

[*] Muratori is brief on this subject ; he merely states that the fathers were discontented with Trent, on account of the tumults of the neighbouring wars, and the severe sickness which raged in the city. Paul III. does not deserve to be accused of duplicity in this affair ; he appears to have acted with sincerity ; for as early as April 28, 1536, he proposed a council, which was repeated on the 29th of the succeeding May. The council was appointed to be held at Mantua in May 1537 ; but when the time approached, many doubts and difficulties were raised by the Duke. At Lucca, in 1541, the council was proposed to be held at Trent in November, but was delayed by the war ; Renaldi, however, declares no place was fixed upon. The council was at length held at Trent, for the first time, December 15, 1545, though thinly attended. It finally terminated December 4th, 1563, in its 25th session. *Muratori Annali d'Italia*, Vol. xiv. p. 461.

We may suspect that something more than state policy decided this removal ; for we are informed, that from June to November, 6000 persons died in Trent, after an illness of from two to seven days.—*Spreugel Gesch. d. arzneik.* iii.

[†] *Origines Contagii*, 1824. *Reprinted in* 1827, " *cum additamentis*."

[‡] Iuuenalis cum·tribus commentariis uidelicet Domitii Calderini Georgii Merulæ, nec nõ Georgii Vallæ.—Impressum Venetiis, anno 1493, die xxii. Aprilis.

[§] Eusebii Pamphili Ecclesiasticæ Historiæ, libri x. Ed. Ern. Zimmermannus Francof. ad mænum, 1822.

they repulsed those who fell sick; they fled from their nearest and dearest friends, or cast their dying bodies into the public roads. The unburied bodies were regarded as dung, (απεσκυβαλιζοντο,) and by every means they avoided communication with death, which, however, they could not escape, [*lib. vii. cap. xxii.*]

Two other Byzantine historians, Evagrias and Procopius, give the clearest proof that they understood the nature of contagion, while describing the universal plague which occurred during the reign of Justinian. Procopius describes the disease with so much accuracy, as to induce the learned Dr Friend to suppose that he was a physician, or at least had studied medicine. He notices bubo, carbuncle, and petechiæ. It is probable that when he says in some the bubo putrified, (τȣτοις δη ὃ τε βουβων εσφακελιζε,) he describes carbuncle. Petechiæ were always and speedily fatal, (τισι τε φλυκταιναις μελαιναις, οσον φακȣ μεγεθος, εξηνθει το σωμα, οι ουδεμιαν επεβιων ημεραν, αλλ' ευθυωρι παντες εθνησκον.) In some the body effloresced with dark coloured spots of the size of a lentil. These did not survive a single day, but all died immediately.* Procopius is very anxious to prove the disease was not communicated by contagion, and uses the very same arguments which a modern non-contagionist would offer in support of his opinion. Evagrius, who suffered from the effects of the disease in his own family, decidedly refers it to contagion. His description of the disease is very brief, and though by no means to be compared with that of Procopius, from whom he has been supposed to borrow,† yet Dr Marx, rather unjustly, and probably because he is a contagionist, thinks greater credit is due to Evagrius than to Procopius. We must, however, agree that the writings of these two authors fully establish the fact of the effects of contagion being fully understood by them both. Besides, we are so accustomed to contradictory opinions in medicine, that we feel no surprise in finding two contemporary writers differ so materially in opinion. In the late destructive epidemic at Groningen, two physicians, both highly talented, residing in the same town, and having equal opportunities of appealing to facts, (Professors Bakker and Thuessink,) have maintained opinions respecting the contagious nature of the disease diametrically opposite to each other.‡ In such cases we ought to apply the motto of the illustrious Haller, "*Fidem non abstulit Error.*" Two other writers nearer our own time, but still anterior to the council of

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* *De Bello Persico, L. ii. c. xxii. and xxiii. p.* 141, *et seq. Ed. Maltreti.*

† *Theodoriti et Evagrii scholastici Hist. Ecclesiast. l. iv. c. xxix. Ed. Gul. Reading.*

‡ *Beschreibung d. epid. Krankheit zu Groningen im. J.* 1826.

Trent, deserve to be noticed. Saladinus Ferro Ascolanus, a writer of the fifteenth century, as we find expressed at the end of his work, gives strong evidence of his acquaintance with the effects of contagion.[*] The other work, the oldest in the Italian language on plague, is that of Soldi, a Florentine author.[†]

The dread of contagion gave occasion to the celebrated Decamerone, in which Boccacio describes the plague at Florence in 1348. Though he is supposed not to have been present, yet he describes the symptoms very accurately, and clearly points out the contagious nature of the disease. He compares the effects of the contagion upon the human body to that of fire applied to dry and greasy substances. Physicians and medicines, he continues, were of no use; the only remedy available was, "*di schivare e di fuggire gli infermi e le lor cose,*"—to avoid and fly from the sick and their goods. Petrarch speaks of the plague of 1348, which deprived him of Laura;[‡] and which was so destructive in its course, that historians asserted that the destroying angel in the time of Noah had not occasioned such desolation.[§] The danger of attending upon the sick was so imminent, that the Pope gave absolution to all who undertook that office.[||] Giovanni Villani[¶] refers the introduction of this same plague into Genoa to some of their gallies returning to port filled with sick, who almost all died, and corrupted the air so much, that whoever approached them immediately sickened and died.[**] The elegant historian of Italy,

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[*] *Scritto da me Saladino Ferro Ascolano, Professor delle arti liberali, dottore di medicina, l'anno* 1448, *pp.* 145, 149, 172, 175,—a work usually attached to that of Gratiolo di Salo, *Discorso di Peste, Vinegia* 1576. Di Salò says, "Alcuni chiamarano cotal peste anguinaglia," some called this plague anguinaglia, (bubonic,) from the swellings in the thighs. Boccacio describes the bubos as "o nell' anguinaia, o sotto le ditelle certe infiature," as certain swellings in the groin or under the armpits, called by the vulgar Gavoccioli.

Even a modern physician of much experience, Dr L. Frank, in giving his prognosis in plague, observes, "omnis peste adfectus omnino pro perdito haberi potest," p. 73.

[†] Jacobi Soldi, Florentini; viri religiosi ordinis Diuæ Mariæ serv. sacræ theologiæ Bachalarii eruditi opus insigne de Peste, &c. Impressum Bononiæ, &c. &c. Anno salutis 1478. By mistake, Ascolano is placed by Sprengel in the fourteenth, instead of the fifteenth century. Gesch. d. A. K. ii. 405. Ascolano is not noticed in Haller's Bib. Med.

[‡] "Or qual fusse il dolor qui non si stima;" *Trionfo della morte.*

[§] The suddenness with which plague is said to prove fatal is the chief cause of the terror attached to it. But Samoilowitz denies the suddenness of death in this disease. He examined the bodies of several who had been said to drop down suddenly, but found they had all been ill ten, twelve, or even fifteen days.—p. 35.

[||] Kurt Sprengel pragmat. Geschichte der Arzneikunde, ii. 484, a most learned and amusing work.

[¶] Viaggi di Francisco Petrarca, dal Prof. Ambr. Levati. Milano, 1820.

[**] Ghilini *Annali d'Alessandria* observes, that in July 1500, a committee of four persons was chosen from the general council, to consider upon the best means of

Guicciardini,[*] who died in 1540, notices the dreadful pestilence which, as the usual accompaniment of famine, showed itself at the siege of Naples in 1528. He says, "*aggiugnevansi l'essere cominciata in Napoli la peste, contagiosa molto dove sono soldati Tedeschi, perchè non si astengono da conversare con gl'infetti, nè da maneggiare le cose loro,*"—"the plague had begun in Naples, extremely contagious where there *are German soldiers,* because they do not abstain from conversing with the infected, or from handling their goods." In 1533, during the plague at Paris, infected houses were marked with a red cross, and persons coming thence carried a white wand,—a sufficient proof of the danger of contagion being known and guarded against. Dr Granville (p. 33) quotes an author on contagion who wrote in 1534. In the work of Ploucquet is inserted, Le Conte, ergo absque præparatione nullum contagium. Paris 1539: about eight years before the removal of the council of Trent to Bologna. The plague which devastated Naples in 1656 nearly reduced it to the state of a cemetery, and infinitely surpassed that which occurred during the war of Lautrech. In the latter, during the two years of its continuance not more than 60,000 persons were carried off; but in the former plague, 400,000 of the inhabitants died in six months. Having been sanctioned by the Pope, contagion was at this period almost universally acknowledged; and Giannone[†] refers it of course to contagion imported from Sardinia by soldiers. He marks its introduction and progress as clearly as if fully acquainted with the tenets of the present time; "*Attacatosi il malore nelle vicine case, si vide in brevissimo tempo sparsa la contagione ne quartieri inferiori della citta, e particolarmente nel lavinaro, mercato, porta della calce ed armieri.*"

Contagionists have universally agreed in referring the origin of plague to the East, but in which part it is endemial they have not yet decided. In Egypt they refer it to Constantinople, or at least to some part of Turkey; and there they probably return the compliment. It is amusing to remark how anxious men are to remove the odium of sickness from their own dwellings, and attach it to their neighbours. I have heard in Africa persons very gravely asserting the comparative healthiness of their own situation, and declaring that every other part of the coast was unhealthy, and even dangerous. Dr Frank is very strenuous in maintaining the general salubrity of Egypt, and

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guarding against the introduction of an epidemic, which raged at that time in Germany.

[*] Istoria d'Italia libr. xix.

[†] Istoria civile del Regno di Napoli, lib. xxxvii. c. 7.

in declaring that plague is always an imported disease. Dr Wolmar cherishes the same opinions, and fixes the charge of poisoning Egypt upon Constantinople, where plague, he asserts, is endemial. Formerly the plague occurred but seldom in Egypt, perhaps only once in five or six years, and on one occasion not till after an interval of ten years. The more frequent occurrence of plague in that country at present is very plausibly accounted for by Dr Wolmar. He remarks, that within the last forty years, the trade has been carried on by Turks dwelling in Scanderoon, Damietta, Rosetta, and Kairo; whilst formerly, the trade from Constantinople, Smyrna, Aleppo, Damascus, and Syria, was wholly in the hands of Europeans domiciliated in Egypt, and Greek or Damascus merchants, from whom the Turkish merchants in Egypt received their goods. By degrees the Turks built ships, and went themselves annually to the above-mentioned cities, so that at the present time the whole trade is in their own hands, and they supply Egypt with the products of the East, as well as of Europe. Whilst Europeans held the trade, they collected their different wares from the various cities, only at those times when they were free from plague; and therefore they imported them into Alexandria, Damietta, &c. free from contagion. On the contrary, the Turks, who disregarded every precaution, made their purchases even whilst the plague was raging, and when the merchants, shut up in quarantine, were willing to part with their goods at an inferior price to what they would ask during the time of health.

If by boldly denying the existence of contagion we could prove it to be a mere delusion, an infinite blessing would be conferred upon mankind; but to do so we must shut our eyes to facts too stubborn to yield. As well might we desire a man to thrust his naked arm into the fire and assure him he will not be burnt. Scarlatina and sporadic typhus, which all persons have witnessed, afford too many melancholy instances of victims to contagion. Yet I think the non-contagionists have done much good; they have brought forward many negative proofs in favour of their doctrine, which all tend to show the danger of being infected to be greatly less than was formerly apprehended; and should we again be affected with that dreadful scourge, the plague, which, in all human probability, there is not much cause to dread, I trust we should not again witness those disgraceful scenes which have occurred, of medical men deserting their posts in the hour of public danger,—a crime equal to that of a soldier who abandons his colours in the day of battle.

By contagion we understand a substance of an animal nature too delicate to be perceived by our senses, but capable of exciting in an organized structure certain actions by which the matter inserted is reproduced; and when a disease is capable of being transferred from one individual to another, modified indeed by circumstances, we say it is contagious or infectious. When its prevalence is unusually increased in any place it is said to be epidemic; and when a febrile disease proves rapidly fatal, and at the same time the deaths exceed the number of recoveries, it has been usual to term it plague or pestilence. Battista Susio, a Hippocratic physician, and a man of learning, impugns this opinion in his work, to prove that Mantua was not affected with pestilence in 1575. He says, during September and October a few persons died who had tumours resembling carbuncles, amounting in forty-five days to only fifteen persons, but, as they died before the seventh day, it was judged to be the plague. In consequence a quarantine was instituted, and about a dozen persons were confined to a mill. As might be expected several sickened and two died, one a woman in childbed, from improper treatment. Here the populace, who held a different opinion, insulted the doctors for not calling the disease plague. "They called us," says he, "infected, carbuncled, bubo-ed, pestified fellows; "*Ci predicavano per ammorbati, per incarbonati, per imbubonati, et per appestati*;"* professional epithets not easily anglicised. A contagious disease usually produces the same train of symptoms in similar organs. The exanthemata affect the skin; catarrh the mucous membranes; and typhus the sensorium. When it does not excite the same train of symptoms in structures similarly organized, it is not contagion, but merely an animal poison. In support of their doctrine, the non-contagionists adduce numerous instances of exposure to contagion with perfect impunity, and we must allow to these negative proofs their due importance. So far as they go, they are extremely valuable, and tend to prove that the danger of infection has been greatly overrated. But when it is objected that we cannot produce contagion in a material form, it is an unfair mode of reasoning, for various matters, too delicate to be observed, when received into the system, produce very remarkable effects. Acrid substances taken into the stomach often affect distant parts; the cruciform and alliaceous plants affect the milk of cows; garlic affects the skin; oil of turpentine and asparagus the urine. Nations living upon fish have a peculiar smell; and a vegetable diet gives an acid perspiration. In like manner the matter of a small-pox pustule, or of a yaw pustule, introduced into subjects susceptible of their action, produces its peculiar disease, though the matter introduced does not appear to differ from the pus of a common abscess; and the saliva of a rabid animal seems not to differ from that of an animal in health. In these instances the pus and saliva are probably merely vehicles in which the contagion is involved. How extremely minute the quantity of contagious matter may be we see in inoculated small-pox and in yaws. A common fly, *musca lepræ*, coming from a yaw sore, and alighting upon a skin very slightly scratched, will produce that loathsome disease; and the *fœtus in utero* has been affected with small-pox, though the mother had not the disease at the time, but passed through it years before.

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* Del conoscere la Pestilenza, p. 57. In Mantova, 1576.

Contagion has been compared to a germ planted in a proper soil, which always produces a plant *sui generis*;[*] and here, too, it may be remarked, how small a proportion the vital or vegetative part often bears to the substance which involves or protects it. Pursuing the same reasoning we may observe, that, as plants degenerate by being repeatedly sown in the same soil, so in like manner contagions lose much of their violence when they have been long introduced into a country, and seem to resume their activity when transplanted into a different region, and associated with different subjects. How contagion is produced we know not; but it appears to be always a product of animal life,—a consequence of febrile action; so much so indeed, that fever seems to be essential to its production. This opinion is strengthened by a remark of Pugnet,[†] a strong contagionist, that plague ceases to be infectious as soon as the fever subsides, in whatever state the buboes or carbuncles may be. Owing to this cause he thinks it is that the non-contagionists have been induced to assert, that plague is not so contagious as is commonly supposed, or even that it is totally devoid of contagion. He informs us also that the charpie prepared by the convalescent pest patients was used for the wounded, without ever occasioning any bad effects. He further remarks, that it was satisfactorily established that no instance could be produced of plague arising from an old pest sore after the cessation of fever. Schraud also remarks, that the wounds or sores of plague patients, probably when the fever had ceased, were closely examined by short-sighted people without ill effects. Contagion may always be produced under certain circumstances, when that peculiar action of the blood-vessels exists which occurs in fever.

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[*] Richter.

[†] Pugnet, Mem. sur les Fievres du Levant, p. 132.

Professor Hufeland[*] considers contagion to be a process of *hyperanimalization*, produced by the crowding together of men or animals. This poison, *(zootoxicon)* he adds, the product of an animal gas, generated in the skin and lungs, is a kind of animal distillation ; a product of the vital process, bearing a strong analogy to the narcotic principle, and very probably somewhat similar to the prussic acid. That a body in sickness should produce a something poisonous to a healthy person is not so strange as that the skin of a healthy man occasionally proves poisonous to a healthy wound in another. I once remarked to an intelligent surgeon how frequently inflammation appeared in the arms of those he bled, and hinted that the lancet could not be clean. He replied that the same idea had occurred to him, and in consequence he had always made a point of using new lancets, but still with the same effect. He therefore suspected it to arise from placing his thumb over the puncture before the arm was bandaged; and by avoiding this in future he met with no more cases of inflammation. Dr Adams notices the same circumstance. "When," says he, "the custom of putting the thumb over the orifice after bleeding was more general, this kind of ulceration, *ulcus exedens* of Celsus, or *festering* as it is called, was much more common."[†] We have many instances of death produced by even a slight scratch received during the dissection of a body recently dead; for if delayed beyond twenty-four or thirty hours after death, or until some appearance of decomposition shows itself, no injury can ensue. It seems not to be improbable that many morbid secretions, or at least such as are the product of a general disease, retain so much of the vital power which produced them as to be capable of communicating a similar disposition to other organic structures.[‡]

Our inability [§] to detect a corrupted or vitiated state of the atmosphere may not depend so much upon the imperfection of our instruments, which almost universally give the same results, as upon some powerful antagonizing power which preserves the uniformity of the atmospheric mixture ; for we must suppose the mixture we breathe to be that which is best adapted for the support of animal life. Light is probably the chief agent in preserving this uniform state of mixture. It may be owing, perhaps, to the greater intensity of light that the fevers of tropical climates are so much less contagious than those of colder regions. Shooting parties pass through swamps under a bright sun with impunity, which before sunrise or after sunset would produce sickness or death. During the yellow fever at Barcelona, it was observed that people might during the day follow their occupations with safety, but to pass a single night in a sick-house was sufficient to be infected. Thuessink likewise remarks from his own experience, that contagion acted most powerfully at night. The healthiest and strongest men, he adds, who watched the sick but for a single night were severely attacked within the space of eight days, p. 59. Those who cross the Pontine marshes know that the marsh miasma, or *aria cattiva*, is chiefly hurtful during the absence of the sun. The Psalmist seems to increase the terrors of pestilence by describing it as *walking in darkness*. During the rainy season at Sierra Leone, a few days of bright sunshine invariably improved the state of the sick. It is the want of light, implying also dampness and want of ventilation, that renders the dwellings of the poor such receptacles of contagion. Some very curious experiments have been made by pouring out considerable quantities of different gases into a room, which in a very short time were absorbed or decomposed so as not to be detected. Would the same effect be produced in a room totally dark? In the Recherches Hist. Chim. et Medicales sur l'air marecageux, Paris, 1823, by Professor Julia, are contained some interesting observations on this subject.

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[*] Atmosphär. Krankheiten ū Atmosphär. Ansteckung. A work small in bulk, but pregnant with most important matter.

[†] Adams on Morb. Poisons.

[‡] Brandis Pathologie, 127.

[§] Contagia sunt succi animales blandi, omni acri et caustica natura destituti, qui impune devorantur, nec ad chemicas leges sed specifica quadam ignota vi nocent viresque corporis vitales immutant. Reil. Mem. Clin. fasc. iv. p. 125. Ueber die Erkenntniss und cur der fieber, I. p. 91.

The enigma respecting contagion has by some been attempted to be solved by comparing it to a disoxydizing or azotifying power;[*] to the effects of *Rhus toxicodendron*;[†] and to many narcotic poisons. Others have considered hydrogen[‡] as an active ingredient in it,[§] but in that case we might expect miners, who are exposed almost daily to its influence, would be more liable to contagious diseases than other classes of labourers. Others again have contented themselves with referring contagion to a peculiar state or constitution of the atmosphere,—a conjecture which has indeed a plausible appearance, but which by no means explains either the nature of contagion or the cause of contagious diseases. We cannot by any known means point out the difference between a pure state of atmosphere, and that which we suppose to be vitiated in a crowded hospital. We only know the sensible qualities of the air, its heat, moisture, and density. The various substances which may float in the air unperceived by our senses are quite unknown to us, yet every odorous body with an almost imperceptible loss of substance fills the atmosphere to a considerable extent around with particles capable of powerfully affecting the organ of smell. In short, we know only the grosser composition, and that perhaps very imperfectly, of the air we breathe.

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[*] Brandis gives some curious remarks on the effects of azote. *Pathologie*, 130.

[†] Conradi. Handbuch der allg. pathologie, page 209.

[‡] Hydrogen is found in most of the animal and vegetable poisons, which, from their narcotic powers, bear an analogy to contagious matters; such as the poison of the serpent kind, the tarantula and scorpion, of bees, of narcotic plants, and the poisonous exhalation of the *Rhus toxicodendron*, which, according to Van Mons, consists of carburetted hydrogen. But these gases, when they do not extinguish life, produce effects very different from contagion. The air of marshes has been found to contain carbonic acid gas and carburetted hydrogen, but we cannot, by any mixture of these gases, produce an intermittent; and the activity of vaccine matter is destroyed by exposure to hydrogen or azote. Bernhardi, p. 30.

[§] Schnurrer, 114.

Dr Grohmann, (ueber die im Jahr 1813, h. pest zu Bucharest,) a contagionist, asserts that even the confined air of a pest hospital is not impregnated with contagion of plague, (Peststoff,) and that the physician runs less risk there than in hospitals with nervous and camp fevers, provided he avoids touching the patient or his clothes, *excepting, however, the necessary feeling of the pulse*, p. 9. Berends Vorlesungen, ii. 176, Jæger de atmosphæra et aere atmosphærico, 1816.

Some authors, indulging their speculations on this subject, and referring contagion to an atmospheric origin, have supposed an animated principle to be superadded, though too minute for our senses to detect; and this idea has given origin to the animalcular system, *—a doctrine espoused particularly by Kircher, but afterwards maintained by Linnæus. † The microscope shows us in a drop of water a world of animated beings; and since the whole of nature teems with life, the air also may contain a descending series of animals as much more minute than those in water as that element is more dense than air. Professor Hufeland,‡ in his extremely interesting work on this subject, inclines towards the same opinion, and thinks we must assume a *pathogenia animata* to account for epidemic and contagious diseases. The term atmospheric disease, he thinks, is justified by the analogy observable between its appearances and that of an individual. In each we remark a certain course, a trifling commencement, a gradual increase, both in intensity and extent; a period of vigour or *acmè* when the disease is most general, and always most dangerous; then a decrease, and at length a total extinction; or, in other words, we may perceive periods of evolution, efflorescence, declension, and death. The operation of this germ of atmospheric disease, aërial infection, or epidemic, may be twofold. Either the contagion remains atmospheric, and does not spread from one individual to another, the reproductive power dying during the first propagation, and thus constituting a simple pure epidemic: Or it increases to such a degree in the individual as to evolve a contagion which may be transferred from one to another immediately, or by means of conductors, capable of exciting in other individuals the same disease.* This forms *contagion* or *contagious epidemic*, and in this Professor Hufeland thinks lies the distinction between an epidemic and a contagion, which may also solve the dispute so often arising, especially in the instance of yellow fever, respecting the epidemic or contagious nature of a disease. Experience affords us many proofs of both instances, for the same epidemic may be at the same time contagious and not contagious; and there may occur, in the former case, at the same moment, patients who have received the disease without contagion, merely through atmospheric influence, and others who have evidently taken it by means of individual contagion. Instances may occur at certain places and particular periods, where the same disease, yellow fever for example, prevails only epidemically, and others where it is very contagious, according as the disease in an individual has acquired the degree of intensity requisite for the production of contagion. In epidemic catarrh likewise we see many affected from epidemic influence alone, while others receive it from the contagion of those atmospherically infected. In scarlatina also, the first patients are usually affected by epidemic atmospheric influence; but afterwards the disease spreads from those individuals in whom it has acquired a certain intensity to others who are disposed to receive it. Hence we find, in this instance, as well as in that of the yellow fever of

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* "Contagiones vera sunt atmosphæræ animalia;" Wallenberg de Rythmi in morbis epiphania, 253.

† Linnæus, Amœnitates Academicæ, V. 5, p. 92. Exanthemata viva.

‡ Hufeland, Atmosphaerische Krankeiten u. Atmosph. Ansteck.

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* Hufeland's division of contagion into *C. vivum*, animal contagion, and *C. mortuum*, marsh miasma, or *malaria*, is sufficiently comprehensive; the former exciting fevers of a continued, the latter of an intermittent type. In the early state of society, it seems probable that fevers must have occurred, and that they originated rather from the soil than from a crowded multitude. The exciting cause of fever from telluric influence possessing little or no vitality, it could not produce the peculiar action requisite for its own reproduction; its activity, therefore, was speedily extinguished. The want of that active principle in marsh effluvium which belongs to animal contagion prevents its adhering to inorganic matters so as to produce fomites. It seems, therefore, not irrational to suppose, that the intermittent was the original form of fever. Climate and other causes occasioned those reduplications of paroxysms which produce the remittent form, and improper treatment would contribute its share to render the paroxysms more and more obscure. Many excellent physicians have suspected even intermittents to be contagious, and among others my late friend, Dr Clark of Newcastle, a physician of great experience, and one who paid much attention to the subject of fever, which he considered as a simple form of disease. Thuessink also in his description of the fatal fever which raged at Groeningen in 1826, decidedly maintains its contagious nature. "I have often observed," he says, "the simple intermittent to be infectious, and spread from one person in the same house to another;" as is also believed by Hecker, Von Hoven, and Horn." The same opinion is also held by his translator Dr Gittermann. It remains, however, for future observers to determine this obscure point. An expression in the Septuagint, Ανεμοφθορια, has been referred by commentators (Schleusner, &c.) to a depraved or corrupt state of the atmosphere, but being joined to Ικτερος, it seems more probably to mean *contagium mortuum* or *malaria*. The word Πυρωσις also, joined to Ικτερος, appears to corroborate this opinion. The passages are Chron. ii. c. 6. v. 28, *ανεμοφθορια και Ικτερος*, and Amos, c. iv. v. 9, *επαταξα υμας εν πυρωσει, και εν Ικτερω*.

Spain and America, physicians who consider the disease merely as epidemic, and others as contagious; a very natural conclusion, for both cases occur, and both parties are right. Professor Dzondi, in a very important little work,* gives many original ideas upon this obscure subject. He considers contagion to be a matter endowed with a vital principle; the product of inflammation in organized bodies, and capable of reproduction, in contradistinction to miasma, which is produced by the decomposition of organized substances in the air, but is incapable of reproduction. His comparative view of contagion and the seeds of plants (p. 28) is ingenious and illustrative.

The Italian physicians have flattered themselves with being able to produce the matter of contagion in a tangible form. Moscati, by suspending globes of glass filled with ice in the crowded apartments of an hospital, where the air was supposed to be infected, found a kind of viscid substance adhering to the outside of the vessels,† occasioned by the vapour which arose from the patients being condensed by the cold. Professor Hartmann‡ further remarks, that these experiments made in the Italian hospitals prove that the basis of the infectious breath is a watery vapour, containing a very diluted animal mucus, to which the contagious matter adheres, " or rather the power of infecting, for this mucus is itself the matter of contagion." p. 76. These experiments, however specious in appearance, are very far from being satisfactory. No instance is given of this viscid animal matter being capable of producing typhus; and it is very probable that a similar product would be obtained by repeating the experiment in an apartment crowded with people in the most perfect health. The idea of contagion being a viscid substance appears to have gained some degree of currency; for Dr Clark,§ speaking of the hospital at Padua, where the windows of one ward are only about sixteen feet above the surface of the sluggish Brenta which flows beneath, adds, if they be carelessly left open till too late an hour, the patients are subject to be attacked by intermittents of a pernicious kind. " Moreover," he continues, " if the observations of Dr Ragaud are correct, *gauze frames* fitted to these windows, while they admitted the air, would arrest the progress of the miasmata. This precaution might be useful in all cases where windows are exposed directly to the air of marshes." || p. 82.

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* *Ueber Contagien, Miasmen, und Gifte. Leipsig*, 1822.

† *Dr Granville's letter on Plague and Contagion, p.* 16.

‡ *Die Theorie d. ansteck. Typhus.*

§ *Medical Notes on Climate, &c.*

|| In our translation of the Sacred Writings, the word *cleave* is used to mark the attack of plague. " The Lord shall make the pestilence cleave unto thee." Deut.

To prove that contagion is not propagated by excrementitious matters, many nauseous and disgusting experiments have been tried by medical men upon themselves. But as these filthy potations are not absolutely conclusive of the fact, it seems rather a kindness to suppress the names of the experimentalists. A cannibal is a more delicate animal. Besides, we know that attempts have in vain been made to inoculate small-pox with blood, saliva, and perhaps by many of the excretions. Dogs eat with impunity various diseased parts, but the plague has been produced even in them by injecting bile and urine into the blood-vessels. A Monsieur le Blanc is quoted by Professor Thuessink as having frequently seen wounded men in hospitals placed in the beds whilst still warm, (see Hodge's Loimologia, p. 27,) and fouled with the vomiting and excrement of patients just dead of yellow fever. Though productive of no bad effects, the learned professor very justly reprobates such conduct, as doing no credit to the hospital. Medical men may perhaps claim the privilege of being filthy themselves, but they have no right to tamper with the comfort and delicacy of their patients.

Hoffmann refers the cause of plague to putrefaction,—an opinion held by Galen respecting pestilential diseases, and first impugned by Fracastorius in his dispute with Monte, Professor at Padua. Even so accute an observer as Assalini speaks of the putrid blood and ichor of a bubo thrown upon his hand. But Chenot compares the contents of a pestilential bubo to that of a common abscess. "*Bubo vel natura vel arte maturus, postquam incisus est, pus album crassum, læve, æquabile effluit.*" Neither do bodies dead from plague putrify sooner than from other diseases, although the nerves and muscles are said to be remarkably soft.[*] And Pugnet says the bodies are "*d'une mollesse et d'une flaccidité remarkable, flasques et flexibles.*[†]

Innumerable instances might be quoted to prove that putrefaction does not produce epidemic diseases, or even contagion, nor apparently increase their virulence. Dr Wittman informs us that in Turkey the cemeteries are extremely offensive in hot weather, the bodies when interred being scarcely covered with earth; yet no instances are given of bad effects arising from the

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c. xxviii. v. 21; but in the Septuagint the expression is still stronger, Προσκολλησαι (shall glue) Κυριος εις σε τον θανατον,—here, as in many other parts, θανατος is synoninous with λοιμος. Luther, in his elegant and nervous version of the Scriptures, instead of pestilence, which is too indefinite, uses *bubo*;—very characteristically expressed by Sterbe-Drüse, gland of death. In the same chapter, v. 27, "Botch of Egypt," (ελκει Αιγυπτιῳ) by many commentators referred to lepra, is more justly referred by Luther to plague, and translated Drüsen Egypti, glands of Egypt. The same term is used in the reformed translation. (Reformirtes Uebersetzung)

[*] Bach Grundzuge, z. e. Pathologie, p. 183.

[†] Memoires sur les fievres de mauv. caractere, p. 147, 167. Samoilowitz uber die Pest, p. 99.

putrefaction. He adds, " Ibrahim Pacha was positively encamped on the burial-ground of El Arish, where the bodies of several thousand persons who had fallen victims to that disease, plague, during the last six weeks, were interred ; and his own tent covered a part of the graves ;"—a pretty strong proof of the innoxiousness of the exhalations, for no notice is taken of any bad effects having occurred from the site of the encampment. In the plague at Moscow* upwards of a thousand bodies, which had been concealed during the epidemic under the floors and behind the wainscot or walls of houses, in order to prevent the survivors being subjected to the horrors of quarantine, were removed and buried in churchyards, without a single instance occurring of further infection. This fact is sufficiently known from De Mertens and Orræus ; but the following account of exhumations in Professor Schraud's *Geschichte der Pest in Sirmien*, is still more in point, and contains much information and many curious circumstances not generally known in this country. Here, as at Moscow, bodies had been buried or concealed rather in improper places, in order that the survivors might escape the much dreaded quarantine, or being cooped up in those dreadful receptacles of misery, pest-houses, as they are appropriately named. In removing these bodies every precaution was used to avert the danger of infection. Iron tongs were used to lay hold of them, and hooks to pull off the clothes. At first only those persons were employed in this duty who had experienced the plague, under an idea that they were less liable to be reinfected ; but not being in sufficient number, others were taken who had neither suffered from plague themselves, nor attended upon plague patients. These people were recommended to dip their shirts in vinegar ; to fasten a sponge wet with vinegar before their noses ; to wash their hands frequently with vinegar ; and when at work, to sprinkle the corpses with it. At night they were ordered to use frictions with oil. But these regulations could only be enforced during the two first days ; for afterwards the grave-diggers carried on the work with the utmost carelessness, trusting to an abundant supply of wine as the only preservative. In this manner 1334 bodies were disinterred and carried from various parts to the public burying-ground ; and an employment, which at first appeared extremely dangerous, was completed without the smallest accident. They even raised from the graves, with their naked hands, portions of bodies separated by putrefaction. Children they bore in their arms to the hearses, merely drying their hands, fouled with putrid matter, upon the grass. Many searched the clothes of the dead, taking off the silver buttons and other ornaments, and decked their wives with the head-dresses of the deceased. One of these men, who had not had the plague, pulled a ring from the finger of a corpse and placed it upon his own. Although occupied three months in this business, none of these people were infected; but one who had never had the plague, and remained quite well during the raising of several dead bodies, was soon afterwards seized with plague when employed in purifying the pest-hospital at Krushedoll. The other grave-diggers remained healthy, and when the business was finished, they were dismissed after passing the proper quarantine or *contumatz*, as it was termed.[*] This immunity of grave-diggers is likewise noticed by Frank.[†] The results of these exhumations, given by the medical men who superintended them, are interesting. Dr Buday's report mentions, that the depth at which the bodies were buried was various; some were one or one and a-half fathoms deep, others were only covered by a foot of earth; but in general the depth was three or four feet. Many of the bodies were covered with a white mould, as if sprinkled with lime. The deeper the bodies were laid the less were they decayed. The same remark is made also by Orræus, who says, deep inhumations retarded putrefaction.[‡] Bodies buried in a wet, marshy, or clayey soil, were but little corrupted, though they smelled so intolerably that the grave-diggers were often obliged to retreat for a while. In cold shaded places, and under falls of water, they were least of all corrupted; and in one of these places a female long buried appeared as if only just interred. Bodies inclosed in coffins or in woollen clothes were less decayed than those without coffins or dressed in linen. Bodies buried upon eminences exposed to the sun, in a loose sandy soil, and not deeply covered, were generally so much decomposed, that only the skeleton remained, which could easily be raised by a single person. They were pressed quite flat, and emitted very little smell.

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* *De Mertens, Observationes Medicæ de Peste.*

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[*] The barbarous word *contumatz* used instead of the more expressive, *Gesundheits probe*, trial of health, is borrowed from the Italian *contumacia*, common quarantine; *star in contumacia* signifies being in quarantine, and also the crime of disobedience to the holy church,—much more to be dreaded than quarantine itself. Dante. Purgatory makes the punishment thirty times the period of the refractory state. It is true that he who dies (excommunicated) in disobedience of holy church, must remain without this thirty times the period of his presumption.

Ver' è che quale in contumacia muore
Di santa chiesa, ancor ch'al fin si penta,
Star li convien da questa ripa in fuore
Per ogni tempo, ch'egli è stato, trenta,
In sua presunzion ;.—*Purgatorio*, c.iii. 136.

A quarantine of one hundred years on the banks of the Styx was inflicted on those whose bodies lay unburied.—Virg. Æn. vi. 327, *et seq.*, from whom Dante has borrowed the idea.

[†] " Vespillones, qui peste mortuous sepeliunt, et ministros qui peste adfectis inserviunt, vix unquam morbum contrahere ;—In hoc eodem Nosocomio vidi vespillones, qui vestes ægrorum pridie ex peste mortuorum induerunt." *De Peste Dys. et Opthalmia Ægyptiaca*, pp. 62–3. Orræus gives nearly a similar account. " Sæpe Jassiæ miratus sum, a permultis cadaueribus, in plaustris accumulatis a vespillonibus obuiam ductis, nullam mephitidem naris feriisse."—*Descript. Pestis quæ anno* 1770, *in Jassia, et* 1771, *in Moscua grassata est.* These instances seem to show that contagion is destroyed by death.

[‡] Orræus notices with surprise the slowness with which bodies putrified in the plague at Moscow, and notices the same occurrence during an epizootick in Prussia. " Cadauera boum ex lue enectorum sat profunde defossa, decem et plures annos incorrupta fere permaneant," p. 163. It appears doubtful whether this may not rather be referred to the depth of the grave.

Dr Steele reports, that bodies exposed to the free air putrified sooner than those interred. Two bodies found unburied in a wood, father and son, who had fled thither after the death of the mother of the family, were so decayed that only the bones remained; but that of the woman, which had been buried five feet deep, though extremely putrid, was still tolerably entire. In the same grave were found bodies fully clothed, and others covered only with a shirt; the former were almost recognizable, but the latter were completely putrified. Two bodies buried nine feet deep, and in water, though long in the ground, were but little decayed compared with such as were buried only half as deep and in a dry soil. Into one grave quicklime had been thrown, but it had merely covered the face of the corpse and formed a crust upon it, which required some force to separate; the face was quite unhurt and cognizable, but the other parts of the body, untouched by the lime, were much decayed. From the above facts we gather that bodies dead of plague soon lose the power of spreading contagion; * and that, contrary to popular prejudice, deep graves and quicklime do not so soon destroy bodies as shallow graves in a dry soil. †

Peculiar smells have been very generally connected and even identified with contagious diseases.‡ Lord Bacon compared the smell of plague contagion to that of mellow apples, or *May flowers*. The exanthemata have a peculiar smell, especially small-pox, though it may be produced merely by a morbid change in the secretions, and quite independent of contagion. *Pugnet* says the smell of patients in plague is insupportable; and Dr Buday, cited by Schraud, asserts that the smell of plague was very perceptibly spread to some distance round the patient, and was so distinctly marked as often to guide him in his diagnosis.[*] When going into the hospital about sunset, he says he often felt a pungent vapour affect his nose, exciting a desire to sneeze. It affected also the eyes of the grave-diggers, one of whom entirely lost his sight. The excretions likewise partook of this peculiar smell; but probably a good deal of fancy may be here mixed with some truth. Brandis[†] appears to run into the opposite extreme when speaking of the peculiar smells of contagious and epidemic disease. He asserts that they produce as little effect upon those who smell them as seeing the patient or hearing him speak. No one, he says, has, by smelling a patient, ever caught the itch, or dysentery, or miliary fever; but in answer to this assertion we may ask if the same can be said of small-pox.[‡] Upon the present subject, Ritter,[§] in an excellent prize essay, makes some curious remarks. The want of ablution, he observes, occasions that insupportable and specific smell which the soldier, when in mass, spreads around him, and which differs in different nations. The smell of Hungarians and Croats differs from that of German soldiers; and an English regiment smells extremely different from a Spanish, Bohemian, or Dutch one. This specific smell of different classes of men may be attributed to their mode of life and employment, as well as to their domestic and national customs. He further asserts, that blindfold he could point out the particular trade of an artisan, or whether he was a Jew, a peasant, or a person living unemployed in extreme poverty; for indigence discovers itself by a peculiar nauseous smell, arising from the accumulation of animal vapours, which surround the body as it were with a halo. It may here be remarked, however, that Orræus and Chenot both assert there is no peculiar fœtor observable in plague. The peculiar smell of the breath in small-pox seems to indicate the lurking contagion; and neither in this, nor in any other cycloid disease, have we direct evidence that the emanations from the body are contagious, independent of those of the lungs. The smell of land is well known to mariners; marshes and mud-banks emit a faint, unpleasant smell, as if to warn us of danger. "*Les marais,*" says a lively writer, "*peuvent être considérés comme les plaies infectes de la terre d'où s'élèvent, à de grandes distances, la langueur et la mort.*"[‖]

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* Omodei remarks, "Il contagio è un prodotto della vita e non della morte." "Contagion is a product of life, not of death."

† It has been proposed, I believe, by Professor Osiander, to cover bodies dead of plague with charcoal, in order to correct the fœtor and destroy contagion, a precaution which is rendered quite unnecessary by the above facts. Besides, if charcoal converts the body, as is said, into a kind of adipocire, common burial must be preferable, as more favourable to the disorganization of the body.—Works by Shaw, iii. 168.

‡ Sprengel Institutiones Medicæ, Vol. ii. p. 68.

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[*] "Halitus ex ægrotis emanans interdum acre quid habuit, quod in adstantium ore fere sensum comesti piperis cieret; in progressu morbi mucidus ille potius, quam putridus odor sentiebatur, qui toties contagii comes est." Lohnes de Utilit. Hydrarg. in Typho. Tubing. 1814.

[†] Pathologie o. Lehre v. d. Affekten des lebend. Organismus, p. 102.

[‡] Bernhardi's Handbuch d. allg. u. besonderen contagienlehre, p. 28.

[§] Abhandlung von den ursachen ansteckender Krankheiten. Leipsig, 1819.

[‖] "Marshes may be considered as the infectious sores of the earth, from whence arise languor and death."—*Julia, Recherches sur l'Air Marécageux*, p. 6.

In what manner contagion enters the human body has been a matter of considerable dispute. In consequence of nausea and vomiting occurring so frequently after the supposed attack, the stomach has been conceived to be the part primarily affected. But if, as appears most probable, contagion be a gaseous matter, it would not in that state easily force its way into the stomach. If, in a more solid form, there is reason to believe it would be acted upon by the stomach, and destroyed, as noticed by Plater, who says, " *cepa ad maturationem bubonis applicata sine noxa devorata*." This is related of Jonas Justus, when a boy, so celebrated in the History of the Reformation.* Small-pox matter also, and the expectoration of consumptive persons, have been swallowed without harm, though all such poisons are extremely active when applied to organs where assimilation does not take place, or at least not very speedily. Thus in peculiar constitutions muscles, crabs, &c. produce very violent effects when not quickly acted upon by the stomach, but they afford a mild nourishment when the organization has sufficient power to assimilate them. † Desgenettes ‡ drank with impunity from the glass of a patient in plague, who died an hour after. In like manner the saliva of a hydropobic patient has been received into the stomach with impunity ;—two very curious and well-authenticated instances of which are related in the Saltzburg *Medizinische Zeitung*. Omodei considers the following only as negative proofs of non-infection by the stomach, where it is said, " *I cani veduti da Deidier, Valli, e Desgenettes mangiarsi impunemente le carni degli appestati, ingollarsi le marcie, e lambire le piaghe dei carboncelli*." §—Upon this subject Professor Hartmann expresses himself rather differently, " The acute, and (in the cause of humanity) so intrepid Valli has shown that the matter of hydrophobia, small-pox, and plague, (consequently also of typhus,) which, when inoculated, unmixed, produce their peculiar diseases, remain inert when previously mixed with the gastric juice." || To the absorption of contagion in a gaseous form by the external skin, as supposed by Soemmering and others, it may be objected, that absorption, as proved by late physiological experiments, is carried on through that channel with too great difficulty. In a solid form it might be absorbed through

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* Schnurrer Materialien, &c. p. 97.

† Pathologie oder Lehre von den affecten des lebenden Organismus. Von J. D. Brandis. Copenhagen, 1815.

‡ Histoire Médicale de l'Armée d'Orient.

§ " Dogs were seen by Deidier, Valli, and Desgenettes to eat with impunity the flesh of those who died of plague, and to devour the pus, and lick the sores of the carbuncles."—Annali di Medicina, 1823. p. 367.

|| *Die Theorie d. ansteck. Typhus*, p. 89.

the skin with the aid of friction; but the clothes afford such protection, that we must suppose the contagious matter to be applied intentionally, if it ever enter the body by this channel. Professor Soemmering[*] carries his ideas of external or cutaneous absorption so far as to suppose the tumefaction of the abdominal viscera, after protracted intermittents, to be occasioned by the febrile miasma taken in by the lymphatics, and applied directly to those parts: but were this opinion correct, we might expect bubos to occur also in intermittents as commonly as in plague. The reception of contagion into the body has been compared to the effects of magnetism[†] and electricity, owing to the suddenness with which many have supposed themselves to be infected. Antes informs us, that in Egypt, when a person supposes himself infected by the plague, he will exclaim, "I am struck or smitten;"[‡] but in many instances this is purely ideal; for in typhus a peculiar burning state of the skin, *calor urens or mordax*, often imparts such a tingling sensation to the fingers as to excite apprehension; and the sickening soon after such a feeling, or the perception of a bad smell, is certainly referred to such a cause. Fewer objections appear to occur to its introduction by application to the mucous membrane lining the mouth, nose, fauces, and lungs; they are always in a proper state of moisture, and afford an extensive vascular and nervous surface most favourable to absorption; and by these surfaces only we are warned of those impure mixtures in the air which affect respiration, or are otherwise prejudicial to health.

(To be continued in next Number.)

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[*] De Morbis Absorbentium, p. 13.

[†] The somnambulist, as he is improperly termed, is placed, by certain emanations radiating from the body of the magnetizer, in an intermediate state of sleeping and waking. His external senses are sealed up, but his internal perceptions become exalted. He is rendered acutely sensible to every feeling, and to every want of the magnetizer; and substances acting upon the latter are instantly transmitted to the patient. Without ever erring, the somnambulist can by taste distinguish magnetized water, though imperceptible to every one else. The same acuteness is applied to smells. A person is supposed, therefore, to be in a state similar to the above, who, being placed within the active sphere of a contagion, is acted upon by a certain influence or emanation from the sick, which at the instant of infection imparts to him a peculiar smell imperceptible to every other person present. A summary of this obscure and perplexing, yet interesting subject, is given by Sprengel.—Institutiones Medicæ, Vol. ii. p. 290. In Kluge, Versuch einer Darstellung des Animalischen Magnetismus, 1818, is contained a very interesting history of its rise and progress, with an astonishing number of references to the almost innumerable writers on animal magnetism; and in Frank's Praxeos Med. Universæ Præcepta, vol. ii. l. p. 461, a storehouse of medical knowledge, are contained some very amusing dialogues between the author, and some patients, whom he had, by magnetic manipulations, brought into a state of crisis or somnambulism. Professor Wolfart's magnetizing institution at Berlin, and the mode of operating in the wonderful cures said to be performed, are very impartially described by Dr Meissner, Bemerkungen aus der Taschenbuche eines arztes, p. 21.

[‡] Wolmar compares the effects of plague contagion on the body to the explosion of gunpowder.

ART. XI.—*Case of Apoplexy from pressure of the Internal Jugular Vein, applied to check Hemorrhage from a wound of that Vessel.* By C. HEINEKEN, M. D., Madeira.

To the EDITORS *of the Edinburgh Medical and Surgical Journal,*

GENTLEMEN,

AS I have never met, either in practice or any popular work on surgery, (with the more recondite I confess myself but little familiar,) with a case similar to the following, I am induced to solicit its publication, not because it belongs to that, generally speaking, most useless of all classes, *the rare*, but because its result points out a very different mode of treatment from that which nine persons in ten would adopt upon meeting with it for the first time, and the adoption of which must, I conceive, inevitably prove fatal, as it did in this instance. I did not see the man while living, nor was I present at the *post mortem* examination; but I give the case nearly in the words, and at the express desire of the gentleman under whose care it occurred, and have no doubt about the accuracy of the details.—I am, &c. C. HEINEKEN.

Funchal, Madeira, 25th March 1828.

Joao Fernandez, a soldier in the artillery, was stabbed between the condyle of the lower jaw and the mastoid process, just below the lobe of the ear on the left side. The knife with which the wound was inflicted was about two inches and a-half in length, about half an inch in breadth, with a slight curve at its point; and it had been plunged up to the handle. Profuse bleeding ensued, which one of his comrades stopped by pressing with his finger upon the wound, after a large quantity of blood had been lost; and he was removed to the Portuguese hospital. Upon examination the temporal artery was found to be wounded, and with considerable difficulty was secured by ligature. Upon the removal of pressure the hemorrhage returned almost as violently as ever, and in a constant full stream of the size of a goose quill. As the man was greatly exhausted by the large quantity of blood lost, the first object was to suppress the hemorrhage as speedily as possible; and with this intent the wound was filled with pieces of sponge, and compresses were applied over them. In two hours from the suppression of the hemorrhage he became comatose, with paralysis of the right arm and leg, and a full pulse. Twelve ounces of blood were taken from the arm, an active cathartic given, and in the evening, as the symptoms remained the same, other twelve ounces were abstracted. On the following day the same plan of treatment was persevered in, and about every eighth hour more or less blood was withdrawn, but without giving any decided relief. On the seventh day he expired apoplectic.

Upon examination a wound more than half an inch in length was found in the internal jugular vein immediately below the base of the skull, and, with the exception of the temporal artery before-mentioned, no other vessel, nerve, or part of consequence was injured. There was no opportunity of opening the skull.

It is, I think, very evident that the means had recourse to in this instance were the immediate cause of the man's death. That the pressure, by being carried to the extent of rendering impervious the canal of the vein immediately upon its quitting the skull, had produced apoplexy, which frequent and continued bleedings failed to relieve ; and that, as it was absolutely necessary, by some means or other, to put a stop to so formidable a hemorrhage, the only chance of preventing the accident from proving fatal consisted in permanently reducing the supply of blood to the brain. This might have been attempted by tying the carotid artery on the same side, and, had evidence of pressure on the brain still continued, by putting a ligature around the other carotid also. In that case the operation alone would probably have had a fatal effect ; but it would have been the only hope ; and if, under any circumstances, a man can survive the obliteration of both these vessels, that appears to be one of the most favourable, in which, as in the present instance, the escape of blood from the brain had been prevented by the closure of so direct and important an exit. In speaking thus I would have it understood, that I do so after knowing the result,—that, had the case occurred to me for the first time, I should in all probability have treated it in the manner actually practised, and brought it to a similar termination ; but there are not wanting those who may have both opportunity and skill to put to the test of practice what I have suggested as merely plausible in theory.

ART. XII.—*Case of Moveable Cartilages in the Bursa of the Sartorius.* By JAMES SYME, Esq. Lecturer on Surgery, &c.

I WAS lately requested by my friend Dr Scott to examine the knee of Master T. A., a stout very well formed boy, 15 years old.

The left tibia was considerably enlarged at its upper and inner part, over which the tendons of the flexor muscles pass to their insertion. This exostosis did not incommode the patient; but he complained of two moveable bodies, which shifted about under the tendons, and occasionally impeded the use of the limb. He stated that the enlargement of the bone had existed for several years, at least three, but that he had not noticed any mobility of the swelling until last winter.

In consideration of the inconvenience which the patient actually suffered, and the risk of farther mischief if the irritation were allowed to continue, we agreed that the bodies in question ought to be removed, especially as this could be done without any fear of those bad consequences which attend similar operations, when the large joints are concerned. I therefore desired the patient to bring them into the most favourable position for the purpose, which he did by completely bending the knee, and then pressing them from below upwards, so as to make them pass under the tendons and project distinctly on the fore part of the tibia, a little below the tuberosity. Having fixed them in this situation, and at the same time drawn the skin as much laterally as possible, I cut down upon the larger of the two, endeavouring to divide at once all the intervening parts, which was somewhat difficult, owing to unusual thickness of the fibrous textures. The pressure being continued, forced it to escape through the opening, with a little synovial fluid, and the smaller one immediately followed. The lips of the wound were retained in contact by the twisted suture, and healed without any trouble.

The larger of the two substances removed was about the size of a common marble, the other was smaller by two-thirds. Their surface was smooth, and possessed a pearly lustre. Their shape was approaching to round, but irregularly nodulated, so that they had a striking resemblance to the roots of the *Bunium bulbocastanum (Pig-nut.)* They had a tough closely adhering capsule, a fibro-cartilaginous consistence, and a bony nucleus.

I am inclined to publish this case by the hope that it may assist to throw light on one of the most obscure subjects in surgical pathology, viz. the formation of moveable cartilages.

It seems to me particularly deserving of attention, that the exostosis existed long before the cartilages, which must therefore be regarded rather the effect than the cause of this effusion of bone. If the very distinct account given by the patient could leave any doubts as to this point, they would, I think, be removed by the present state of the other knee, where a considerable exostosis can be felt at the insertion of the semi-membranous—though there is no vestige of a moveable cartilage.

Sir A. Cooper has observed, that exostosis occurs most frequently at the attachments of tendons, and attributes this to the irritation resulting from inordinate contraction of the muscles. This opinion derives support from the well-known anatomical fact, that the processes of bones always increase in strength along with the muscles attached to them. Another argument may be drawn from several cases which have come under my care of exfoliations from the ischium and pubes at the origin of the adductors of the thigh and flexors of the knee. I may take as a specimen of these, that of a herring-curer, who seven years ago worked a whole day, according to the custom of his employment, with his feet widely separated, alternately stretching himself to the utmost, and then stooping with his knees straight, a position which of course caused a violent extension of the flexors of the knee, viz. the *Biceps, Semi-tendinosus and Semimembranosus.* In the evening he complained of an uneasy feeling of fatigue in the right hip. This gradually passed into pain, and after a time was succeeded by the formation of an abscess, which was treated as a *fistula in ano.* Many abscesses formed subsequently, and for the most part prevented him from following his employment. Some small pieces of bone were from time to time discharged ; but his surgeons having contented themselves with simply extracting them as they appeared, never struck at the root of the evil. When he applied to me there was a large abscess in the upper and back part of the thigh, and an opening just below the edge of the *gluteus maximus,* at the bottom of which I felt a piece of loose bone. Having evacuated the abscess I introduced a long straight bistoury into the sinus, and dilated it so as to admit my finger to the bone and ascertain that it lay between the flexor tendons. I enlarged the orifice of its containing cavity and then extracted it. It was about the size of half a sixpence. The patient very soon regained the use of his limb, and also his general good health. But some months afterwards he told me that the sinus still discharged a drop or two of matter, and that he occasionally felt a pricking pain in the hip. I probed the sinus and felt a small bit of bone, which was removed as the former one, but with rather more difficulty, owing to the small size and very firm margin of the opening between the tendons. After this the wound healed directly, and the patient has continued perfectly well ever since.

75, George Street, 25th May 1828.

Erratum in Mr Syme's paper in last Number, (xxix. p. 294, l. 9.) *For* " similar to those *very* rare cases in which the *vessels were* obstructed from effusion," read, " those *far from* rare cases in which the *veins are* obstructed, &c.

PART II.

CRITICAL ANALYSIS.

Art. I.—*Reports of Medical Cases, selected with a view of illustrating the Symptoms and Cure of Diseases by a reference to Morbid Anatomy.* By Richard Bright, M.D., F. R. S., &c. Lecturer on the Practice of Medicine, and one of the Physicians to Guy's Hospital. London, 1827. Longman, &c. 4to. Pp. 230, with coloured Engravings.

In consequence of an accidental delay in the receipt of the copy sent to us, we have been prevented from taking notice of Dr Bright's splendid work at the time of its publication. Warm eulogiums, in which we unreservedly concur, have meanwhile been bestowed on it by various journalists; and, as the best proof that these eulogies are not unmerited, the author's opinions are not only familiar to the learned in the profession, but are also becoming already current among practitioners generally. In these circumstances it would be superfluous to attempt adding to Dr Bright's well-earned reputation by any farther terms of encomium on our part; and we shall therefore proceed at once to give an abstract of his Hospital Reports, and the pathological and practical views he has deduced from his inquiries.

The work is intended by its author for the commencement of a series of reports on all the diseases capable of receiving illustration from pathological anatomy,—to be published from time to time, according as an adequate number of cases happens to be collected on each disease. The principal source from which his facts are derived is the hospital of which he is physician; and besides receiving the ordinary assistance of friends, he has enjoyed, and it is to be hoped will continue to enjoy, the invaluable advantage of Dr Bostock's aid in connecting his own pathological labours with pathological chemistry. The cases in the present volume are ninety in number, illustrated by fifteen coloured engravings of great beauty and accuracy. The subjects to which the cases relate are, 1. Dropsy from diseased kidney; 2. Dropsy from diseased liver; 3. Dropsy from diseased heart, or other organic derangement of the thoracic viscera: 4. The results of inflammation of the different textures of the lungs; 5. *Phthisis pulmonalis*; 6. The influence of ipecacuan and mercury on dysentery; 7. The morbid states of the intestines during fever; 8. The treatment in inflammation of the intestinal mucous membrane in fever. The three first of these heads occupy more than a half of the whole volume. To them we shall at present confine the reader's attention.

Although dropsy, it is unnecessary to say, is one of the most important topics, in a practical point of view, which can come under the attention of the physician and student, little has of late been added to our knowledge of its pathology. And in particular it seems to have attracted less regard than other less important subjects in the course of the assiduous researches in morbid anatomy which have been carried on for some years in the French capital. Dr Bright, if his views eventually turn out well-founded, has amply compensated for this neglect, and enabled the pathologist to make an addition to the science of great value in its practical inferences.

Commencing with a short view of the generally-received causes of dropsy, and enumerating as such obstructed circulation through the heart from diseases there or in the subordinate great vessels,—obstructed circulation through the *vena portæ* from diseased liver,—obstruction of the *vena cava* in the abdomen from the pressure of surrounding disease,—obliteration of particular vessels from accidental pressure,—and (he might likewise have added) morbid formations within their cavity,—he proceeds to remark, that, while these causes are familiarly known, and their operation universally acknowledged, there are certain changes occurring in the kidneys, which have appeared to him to be also often the primary source of increased serous exhalation into the cellular tissue and great cavities, and which have hitherto been very little, if at all, attended to by the physician as possessing that tendency. This opinion he has illustrated by an account of twenty-four cases of dropsy in which the kidney was considered the primary cause, eleven where the cause evidently resided in the liver, and four in which the cause was diseased heart.

The proofs of the agency of diseased kidney, to be gathered from a careful perusal of the cases, together with the author's comments, appear to be the following. *In the first place*, there are present,—in some instances from an early period, in a few even before the dropsical effusion begins,—symptoms of disorder in the kidneys; which, if too obscure to be considered at the time unequivocal signs of renal irritation, are at all events too distinct to be considered altogether fallacious when dissection subsequently reveals an obvious chronic disorder in the organ to which the symptoms directed the attention. The symptoms in question are pain in the region of the kidneys, or tenderness there, or bloody urine, or all three combined, *and in every instance the discharge of albumen with the urine.* This last is regarded by Dr Bright as the pathognomic sign of the variety of dropsy which depends on renal disease. *Secondly*, in some instances of dropsy no sign whatever can be detected during life of disease in the liver or in the heart and appendages, while at the same time there is albuminous urine, and sometimes other more generally acknowledged signs of derangement of the kidneys. *In the third place*, the kidneys are sometimes found after death to be the only important organs which have undergone morbid changes of structure; or at all events the liver, heart, lungs, and other organs whose organic changes are known to occasion dropsy by obstructing the passage of the blood, are found in a state of health. *And lastly*, in the more numerous cases in which other parts and organs, and particularly the liver, are also diseased, it often happens that the derangement of structure in the kidneys is much greater than anywhere else, and consequently of much older standing, so as to show that the diseased state of the liver or other parts is secondary to that of the kidneys, if not produced by it, as indeed, according to Dr Bright, appears very probable. To these arguments, deducible from the author's narrative of his cases, it may be added, that the tendency of obstructed secretion of urine to cause dropsy is well exemplified in some cases of pure *ischuria renalis.* In a case which occurred to us a few years ago of complete suppression, which lasted above two days, great anasarca was rapidly induced, and it as rapidly receded when, by means of copious blood-letting, purgatives, opium, and warm-bathing, the secretion of urine was re-established. From all the foregoing statements it certainly appears fair to conclude, that a chronic affection of the kidneys, which causes gradually-increasing disturbance of their function, may also induce dropsy.

These observations being premised, we shall now describe the changes of structure in the kidney found by Dr Bright in the cases which he considered during life as the renal variety of dropsy,—then mention the symptoms,—and finally notice shortly the hints he has drawn from his inquiries to improve the method of cure.

In those who have died after labouring under what he considered dropsy from diseased kidney, he found three forms of organic derangement, probably modifications of one another. In the *first* or slightest derangement, the kidney is not enlarged, but unnaturally soft, mottled-yellow externally, and mottled-gray and yellow internally, as shown by a longitudinal incision. In the more advanced form of this variety, portions of the kidney become consolidated, and externally rather tubercular, the projecting parts being paler than the rest of the surface, and not admitting an injection thrown into the arteries. In the *second* variety of derangement the cortical part of the kidney is gradually converted into a granular texture with a white, opaque, interstitial deposit. In the early stage of this form of disease the texture of the kidney appears as if sparsely dusted with fine sand, and is softer than natural. In the advanced stages the granulation is easily seen both on the external surface and internally by a longitudinal incision, and then the kidney is commonly enlarged. The *third* variety is characterized by roughness externally to the touch, arising from numerous small projections of a yellow, red, and purplish tint; and such kidneys have generally a lobulated form and semi-cartilaginous hardness. Besides these changes in structure, the author likewise thinks it probable that others will be subsequently found to exist as the immediate cause of dropsy, and specifies preternatural softness without farther alteration, and also occlusion of the tubular structure by a white deposit as two pathological conditions which he has already seen in connexion with anasarca. The exact nature of the change which the structure of the kidney undergoes in the preceding pathological states has not been determined. It appears probable, however, that there is deposited in its substance an animal principle naturally foreign to its composition. It will be seen hereafter why the ascertaining the precise nature of this deposit is an object of importance.

The cases of dropsy which Dr Bright seems to think may be referred to diseased kidney as their cause are chiefly those which have been commonly, and many of them vaguely, termed inflammatory. Such are dropsy subsequent to scarlet fever, anasarca occurring at the approach of mercurial erethysm, and those dropsies which occur suddenly, after exposure to cold and wet, in people debilitated by frequent attacks of syphilis, drunkenness, and other excesses. In those cases particularly, in which, the constitution being previously broken down by drinking, the disease commences rather suddenly and after a decided and unusual exposure to cold, he thinks renal irritation may be often traced as constituting the primary or earliest symptoms, and still more frequently as indicated by great organic derangement in the dead body. If there are present from the beginning the ordinary signs of renal irritation, then the patient is affected with lumbar pain, tenderness on pressure in the loins or fore part of the belly, bloody urine; *and in all cases the* *urine is albuminous,—frequently this is the only sign of the kidneys being diseased.* As it is therefore the pathognomic sign of a renal dropsy, it may be right to notice this symptom more specially, and to lay down the varieties to which it is liable.

When the urine contains only a trace of albumen it acquires a faint white opacity when heated to near the boiling point. This opacity, when the quantity of albumen is greater, gives place to a flaky precipitate on the urine being fairly boiled. When the quantity increases beyond a certain point the precipitate separates less and less perfectly, and at length, if the urine is much loaded, it coagulates by heat into a uniform tremulous jelly, just as the serum of blood does. Sometimes even when the quantity of albumen is small, heat causes the formation of a thin jelly-like mass instead of flakes. At other times the albumen, though present, is not separated at all; in that case the urine will be found to be alkaline,—a source of fallacy which must be obviated by neutralizing or rather supersaturating the alkali with hydrochloric acid previous to boiling. The foregoing phenomena have been observed to keep pace with the progress of the disease naturally or under the influence of remedies. The secretion of albumen, according to Dr Bostock's experiments, appears to be attended with a diminished secretion of urea and of the salts of the urine; and he likewise considers that some of his experiments detected in the serum of the blood a principle analogous to urea. This would be a very curious and interesting fact, but farther researches are required for establishing it. Albuminous urine is commonly of low specific gravity, seldom above 1024, frequently varying from 1012 to to 1017, sometimes so low as 1008 or 1006, and the average of twenty-six cases examined by Dr Bostock was 1017. The colour of albuminous urine is generally paler than natural. Sometimes, however, it is brownish, or reddish, the last of which appearances indicates the passage of the colouring matter along with the serum of the blood. In such urine the coagulum or flaky matter formed by heat is brown; in the paler kind it is dirty white, or grayish-white. Albuminous urine is not necessarily connected with organic disease in the kidney; at least it is sometimes found in the healthy state owing to causes which cannot be easily traced.* It is likewise met with in other diseases besides dropsy; but in them Dr Bright has hitherto always found in the kidneys a change of structure analogous to that which he remarked in dropsy. In short, the pathological change which the kidneys undergo does not necessarily induce dropsy, although such he conceives to be its effect in probably the generality of instances. *When the liver or heart or both have been found diseased, and not the kidneys, he never remarked albuminous urine during life.*

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* See Prout on Diseases of the Urinary Organs, p. 39. That author relates an instance in which the urine continued strongly albuminous for four years without the health being affected. The individual even bore a child in the course of that period.

Besides the signs of renal irritation now mentioned, there are other peculiarities which serve to distinguish during life the renal variety of dropsy, from that which originates in diseased heart, diseased liver, or other obstruction to the free passage of the blood in the veins.

Of these the most pointed is a strong, well-marked tendency to inflammation, particularly in the serous membranes. In several of the cases, Dr Bright had to combat evident symptoms of the kind by appropriate, and sometimes vigorous treatment. Out of seventeen dissections, ten showed the remains of pleurisy, frequently recent; in three there were distinct signs of recent pericarditis; in one there was recent peritonæal inflammation; and in another, death was manifestly owing to *œdema glottidis.* It is likewise well worthy of remark, that in many of these cases the local inflammation was latent. In several of the pleurisies, and in one of the examples of pericarditis, no symptoms existed to attract the notice of the physician to the local disease during the patient's lifetime. Hence in this variety of dropsy the state of the organs within the chest should always be carefully watched, and the proper observations made from time to time with the stethoscope, even though the chest, judging from general symptoms, is not affected. Another set of affections, which appears apt to occur in the course of dropsy from disease of the kidneys, are disorders of the head,—epilepsy and apoplexy having both been observed. We are inclined to think from our own experience that the superior frequency of local inflammations during the course of renal dropsy, in relation to the frequency of similar affections in other kinds of dropsy, has been overrated by our author.

In regard to the treatment, Dr Bright approves of general and local blood-letting, both for checking the progress of disorganization in the kidney, and for combating accidental inflammation in the serous membranes or a tendency to apoplexy; and he does not appear to have been directed much by the pulse in withdrawing blood, even venesection being evidently advantageous when the pulse was almost natural. Laxatives are indispensable, and he prefers the saline species. Diuretics are also essential, and here too he prefers in general saline substances, particularly supertartrate of potass. Stimulant diuretics he disapproves of, as much probably on account of the supposed increase they cause in the irritation of the kidneys, as from their failing to excite diuresis; at least we have seen diuresis readily induced even by the spirit of nitrous ether, in a well-marked case of dropsy, with the symptoms of renal derangement. Squill is recommended, and in general it was given along with a little opium or hyoscyamus, with the view of employing an additional means of subduing irritation in the kidneys. He is inclined to doubt the utility of mercury, nay, to question its propriety. " The cases," says he, " which have proved most successful in my own practice, have generally been those in which I have rigidly abstained from the use of mercury. In some cases I have seen the good effects of other remedies entirely interrupted by the mercurial action; and I have likewise seen several instances in which the cure, when mercurials have formed part of the plan, has been protracted to a great length; and a great many in which the full action of mercury has not prevented the regular progress of the disease and its fatal termination. Yet I have undoubtedly seen well-marked cases of this disease, in which the free use of mercury to complete ptyalism has not prevented the patients from receiving great, perhaps even perfect relief from the remedies with which it was combined."—" Independently of the very great doubt which exists as to the advantage to be derived from mercury, there is one circumstance which most materially limits our power of employing it, and that is the violence and rapidity with which the ptyalism often comes on, and the great difficulty which is frequently experienced in restraining its effects: for when the cellular membrane is in the peculiar state of anasarca induced by this disease, the gums and cheeks are not capable of supporting the process of ulceration, and often pass into a state of gangrene," p. 73. We have quoted these passages as a useful and necessary caution to those who are fond of the indiscriminate use of mercury in dropsy,—a caution by the way which is particularly applicable to the author's immediate brethren.

Sometimes coagulable urine and other signs of renal irritation occur in dropsy, along with such feebleness of the circulation and general debility, as to render tonics necessary. In these circumstances Dr Bright has derived much advantage from combining sulphate of kina with squill, or from the use of chalybeates or the *uva ursi.*

On the subject of the treatment it is right to add, that, although in an hospital we may not be often very successful, on account of the great progress the disease has generally made before the patient comes under the physician's care, the case may be reasonably expected to be very different under other circumstances. When the organic disease in the kidneys has advanced so far that a notable change has taken place in its structure, the probability is that art cannot effect much good. The grand object of the physician and pathologist, in regard to such organic diseases, must always be to detect their signs when they are but incipient,—when the action going on in the organ is rather a peculiar irritation preparatory to organic change, than an actual, or at all events material alteration of structure,—and consequently to reduce the method of cure as much as possible to simple antiphlogistic treatment. It is the attainment of this object which constitutes the peculiar value of the conclusions drawn by Dr Bright from his researches. If his opinions go prosperously through the ordeal to which they will of course be presently subjected in various quarters, they will enable the practitioner to detect the primary cause of dropsy where formerly it was little looked for, and consequently to combine a radical method of cure with what must formerly have been nothing more than palliative treatment.

Partly to complete the illustration of the foregoing views of the causes of dropsy, and partly on account of their own intrinsic value, the author has annexed several cases of dropsy occurring in connexion with diseased liver, heart, or lungs. Of these the cases of dropsy from diseased liver are the most interesting.

They are seven in number. In two the disease of the liver was a deposition of yellow or whitish matter among the *acini*; in three a degeneration not unlike scirrhus, there being hard bands in the substance of the gland, so that it cut almost like cartilage; and in two more the liver was composed of a congeries of pisiform tubercles. In the two first the urine was not coagulable by heat; and accordingly, on examination after death, the kidneys were found to be natural in structure. In one of the cases of scirrhous liver the urine was also not coagulable, and the kidneys not diseased. In another the urine was albuminous, though not very much loaded, and the kidneys were found soft, dissolved, and watery, a state which we have already said Dr Bright considers to be apt to lead to dropsy, and to cause coagulable urine. In the third case of scirrhous liver, as well as in the two cases of tuberculated liver, the kidneys were sound, but the nature of the urine had not been ascertained during life. On the whole, then, it appears that the fact of albumen not being present in the urine when dropsy arises from diseased liver uncombined with diseased kidney, has been inferred from the observation of three cases only,—a basis which certainly must be allowed to be too limited for bearing so important an induction.

The most novel and interesting part of Dr Bright's researches on the diseased conditions of the liver which give rise to dropsy is the chemical examination of this gland in its pathological states by Dr Bostock. It appears probable from his researches, that the form of disease we described in the first instance, that, namely in which a yellow or whitish matter is deposited in the natural structure of the liver, consists in the deposition of a principle nearly the same as the *cholesterine* of bile. This principle may be easily separated in several ways. Dr Bostock found, that when the liver was boiled in alcohol, a solution was procured, from which, on cooling, or subsequently on the addition of water, a white precipitate was formed;—that if the liver was boiled in caustic potass, the parenchyma was gradually dissolved, and the same white matter rose undissolved to the surface;—and that a similar substance was obtained by macerating the liver for six days in dilute nitric acid, and washing the residue with water. In all of these ways, a principle was procured, which did not fuse in boiling water, but at a temperature somewhat higher; was soluble in alcohol, not in water or in caustic potass; and burnt with a brilliant flame like oleaginous or waxy matters. Dr Bostock, however, does not appear to have succeeded in procuring it of a crystalline texture, or pearly lustre. In other particulars, its properties correspond exactly with those of cholesterine. It is probable, therefore, that this principle will be soon found to be a very important one in a pathological point of view. But a few years have passed since it was discovered by M. Chevreul in certain biliary calculi. Since then it has been proved to be a constituent of healthy bile, and to form a very large proportion of most biliary calculi. Dr Bostock's experiments tend to connect it likewise with certain varieties of diseased liver; and there appears some probability that it is also the foreign principle which is deposited in certain forms of diseased kidney described above. We may farther add, that we have had lately an opportunity of witnessing it in two extraordinary situations, once in the fluid of hydrocele,* and once in the fluid of a large osseous cyst, into which one of the kidneys had been converted in a case of dropsy. The fluid was in each case examined by Dr Christison, who found that it consisted of serum of light specific gravity, containing an innumerable multitude of fine pearly crystals of pure cholesterine. It seems manifest, therefore, from these and other analogous facts formerly published, that in certain states of the constitution, there exists a tendency to a preternatural formation of cholesterine; and this tendency will probably be found to constitute an important cause of various organic diseases.

The only other result of Dr Bostock's experiments which requires notice here is the composition of the hepatic tissue in another form of disease, which, however, did not occasion dropsy. The patient after repeated attacks of syphilis was seized with dysentery, followed first by stricture of the rectum, and subsequently by ulceration of the colon and artificial anus. He died with rapid emaciation and diarrhœa. His liver was much enlarged, of a uniform pale yellowish-brown colour, and of the consistence of new cheese. When subjected to analysis, Dr Bostock found that it consisted entirely of a fatty matter resembling tallow, deposited in meshes of cellular tissue. The contents of the gall-bladder were a puriform mucus, quite destitute of bilious intermixture. Dr Bostock, we may add, has also given the analysis of the fluid of the gall-bladder in a case of protracted jaundice, accompanying tubercular liver and dropsy. It had an orange-red colour, and thin consistence; the animal matter in it was almost entirely albumen, with a little colouring matter different from that of the bile; and in fact it contained none of the usual biliary principles.

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* A notice of this case has appeared in the Morbid Anatomy of the Brain, lately published by Dr Monro, in whose museum both of the fluids described above have been preserved.

We must defer the consideration of the rest of Dr Bright's work till next number.

ART. II.—*Transactions of the Association of Fellows and Licentiates of the King and Queen's College of Physicians in Ireland.* Vol. V. Dublin, 1828. pp. 576.

THE members of the Irish Association continue to promote with energy the purposes of their institution. If in the present volume the communications are more varied and numerous than in those formerly published, they are in no degree less valuable, either in improving the accuracy, or in extending the boundaries of medical science. It contains twenty articles on various subjects in medical and surgical pathology and therapeutics.

The first papers to which the attention of our readers may be directed, are the "Clinical Observations of Dr Robert Reid on the Epidemic Fever of 1826," and the "Report of the House of Recovery and Fever-Hospital of Dublin, for the year ending in 1827, by Dr John O'Brien." In the former the fever is described as it was observed in the Fever and Dysentery-Hospital, Kevin Street; in the latter, as it occurred in the House of Recovery and Fever-Hospital of Cork Street. The information communicated by both may be condensed in the following manner.

Fever, which is never absent in some degree from large cities, prevails almost every season in Dublin to a very great extent, and assumes occasionally a form so violent as to resemble rather a sweeping pestilence than the usual manageable form of ordinary fever. The year 1826 afforded one of those seasons during which this disease spread with such rapidity and so extensively among the population of Dublin, as never to have been equalled in its effects by any previous epidemic hitherto recorded. Whether the meteorological peculiarities of the season had any real influence in communicating this epidemic character is perhaps not a point susceptible of strict demonstration. Dr O'Brien, however, thinks it not unimportant to record, that the spring of 1826 was cold and dry, the summer intensely hot and dry, the autumn variable, and the winter severe and inclement;—a succession of weather which all testimony, historical and traditional, concur in representing as insalubrious to Ireland. He further remarks, that the injury which the potato crop sustained during the unusually hot dry summer and autumn of 1825, with the want of employment and consequent poverty of the working population, subjected a large proportion to the miseries of famine. The knowledge of these circumstances led a committee, appointed to inquire into the state of the poor, to apprehend an aggravation of public calamity in the probable addition of epidemic disease; and the result showed that their fears were not without foundation.

According to Dr Reid, epidemic cases of the disease began to appear so early as the end of February or the beginning of March 1826. In April the number of applications at the Cork Street Fever-Hospital had considerably increased. On the 9th of May the number of applications exceeded the means of accommodation, which amounted to 220 beds; and this increase augmented so rapidly as early in June to attract the serious attention of the public authorities. On the 17th the Board of Health addressed to the physicians of the different hospitals of Dublin circulars, requesting information as to the causes, character, and extent of the fever, and on the adequacy of the means of relief within the reach of those among whom chiefly its prevalence was observed. One of the principal points in the answers of the physicians was the inadequacy of hospital accommodation, and the consequent diffusion of the disease by the sick remaining too long among the healthy. To obviate this evil, such measures were adopted by government as the urgency of the occasion demanded, and the promptitude with which the means of alleviation required to be administered.

In the garden of the Meath Hospital a shed or temporary building was erected, and was opened on the 4th August for the reception of 240 patients. On the 15th of the same month the accommodation of the Cork Street Hospital was, by the erection of tents in the lawn, capable of containing 180 patients, augmented from 220 to 400. On the 18th the Wellesley Hospital, North King Street, was opened for the reception of 113 patients. Further accommodation was provided at Sir Patrick Dun's and at Steven's Hospitals; and when all these measures proved insufficient for the exigencies of the season, a large building in Kevin Street was fitted up and opened on the 4th September for the reception of 230 patients. By these measures the hospital accommodation was enlarged at this time to

Cork Street Hospital, - -	400
Meath Hospital Garden, - -	240
Wellesley Hospital, - - -	113
Kevin Street Hospital, - -	230
	983

By these several means the total amount of hospital accommodation was augmented to above 1400 beds, or 400 more than that, which was found requisite during the epidemic of 1817–18. If to this it be added, that there still remained so many of the sick poor at their own houses, that, in a public meeting held at the Mansion House, on the 26th October, to consider the best means of arresting the progress of the epidemic, it was stated, upon accurate documents by the Lord Mayor, that 3200 persons were under the influence of the disease at their own houses, it will convey an idea of the extent of epidemic sickliness greatly more aggravated than any thing to which we are accustomed on this side of St George's Channel.

During this month (October) the fever, which had been gradually extending its influence, was thought to have attained its highest rate. This it preserved during the months of November and December; but in January 1827 the first marks of abatement occurred in the reappearance of ague of various forms; and in the beginning of March it underwent a sudden and unexpected decline, which continued uninterrupted through the months of April and May. About the conclusion of the former, the abatement was so considerable as to admit the evacuation and final removal of the sick-camp on the 8th of May. On the 12th, the number in hospital was only 185, scarcely exceeding the usual average. At the end of May or the beginning of June, it is considered by Dr Reid as having entirely ceased.

The commencement of the epidemic presented two forms of fever, distinguished by Dr O'Brien into the old and new constitution.

The first was the ordinary typhus of this country, proceeding to the 11th, 14th, 17th, or 21st days. Though inferior in numerical amount to the one immediately to be noticed, it was much more fatal. In several instances, however, it was complicated with the latter, and assumed its symptoms. The delirium was then more violent, amounting to frenzy. Black crusts on the tongue, teeth, and gums were seldom seen. Petechiæ were less frequent; but the skin in many cases became yellow, though not of the deep tint observed in icteroid or yellow fever. The temperature of the surface was little increased, and was often even lower than the natural standard; and the general aspect of the fever partook more of the nervous than of the vascular character.

The second variety, or that of the new constitution, which was most predominant, was one distinguished chiefly by short periods, terminating in 3, 5, 7, or 9 days, the five-day period being the most common. Though in hospital practice it is difficult, in consequence of the confusion of recollection in most cases of fever, to distinguish accurately the day of invasion, in the present epidemic the crisis was generally ascertained with facility. In the months of June and July 1826, Dr O'Brien, after cautious observation of the critical day in 40 cases, found 19 terminated on the 5th day, 12 on the 7th, 5 on the 11th, 2 on the 17th, and 2 on the 21st days. The invasion, which usually came on at noon, consisted of a sudden attack of sickness, headach, pain in the lumbar region, and chillness. Toward evening, when all the symptoms increased, the chillness became a rigor, and the sickness was followed by vomiting or retching, continuing more or less for 3 or 4 days, sometimes through its entire course. On the evening of the 5th or 7th days, generally after a rigor, sometimes without previous warning, profuse sweating continuing during the night completed the crisis, and left the patient convalescent in the morning. In this comparatively mild form of the disease, the most perplexing circumstance was the frequency of relapses, which were so common as to give rise to the idea, that in several instances the fever was one of a long period broken into short ones. The liability to relapse is stated to be in the inverse ratio of the duration of the disease; the five-day fevers being more prone to relapse than the seven-day, the seven than the nine, and so forth. The apyrectic period is stated to be longer in the seven-day than in the five-day fevers, yet to be irregular in all, varying from 24 hours to a fortnight or upwards. To prove that the relapsing tendency was not under the influence of irregularities in diet, Dr O'Brien adduces the fact, that nearly all the nurse-tenders, who were "treated with the utmost attention and kindness," suffered one or more relapses. Is it not possible, that, if operating in the form of indulgences, kindness may have occasionally proved an exciting cause of relapse? The sulphate of quina, the author, from its effects in some cases, is inclined to regard as a beneficial preventive.

It is a feature of some interest in the history of this epidemic, that its character and phenomena appear to have been much modified by the season. Thus during summer it was distinguished by the intense affection of the vascular system, more especially of that of the brain; hard, rapid pulse; acute headach, and active delirium; and pains in the muscles and bones, sometimes with a light yellow tint of the skin. The disease was nevertheless generally mild, since whole families, labouring under all the disadvantages of filth and poverty, are said to have passed through it with impunity. In a few only the symptoms characteristic of typhus appeared. But in general, while the diffusion of this variety was great, its mortality was small.

Somewhat different was the character of the disease during autumn and winter, when dysenteric symptoms, either concomitant or successive, tended to complicate the disease, and add considerably to its fatality. Of this complication the worst forms were accompanied by intestinal hemorrhage degenerating sometimes into melæna; and from this few aged persons recovered. As the winter advanced a change took place in the type of the fever, in the 5th and 7th day fever being converted into periods of 11 and 14 days, or even more protracted. The tendency to relapse diminished at the same rate.

Of the accidental concomitants of the fever the most important was gangrene of the feet and toes, which took place in four instances among the patients in the tents, in consequence of the intensity of the cold during the months of December and January. Of these three proved fatal from the gangrene alone; and in one, after the feet sloughed off, recovery took place under the use of wine and cordials, and after removal into a comfortable ward.

As the winter proceeded the character of the disease again underwent some change. Already it was beginning to betray less tendency to spread, and to be limited chiefly to the persons originally attacked. But towards spring it showed a distinct tendency to intermit and to remit; and ague even, which had for years been a stranger in Dublin, began to prevail generally. The manner in which this transition took place appears to have been chiefly in the cases of continued fever undergoing relapses, which invariably observed the intermittent form sometimes irregularly, sometimes the regular quotidian or tertian.

The following table exhibits at a single view the rate of increase and decrease of the fever, and its mortality at different periods of its progress:—

1826.	Admitted.	Discharged.	Died.	
January,	526	520	39	
February,	383	299	28	
March,	484	459	34	
April,	612	558	30	
May,	802	784	26	
June,	741	723	21	
July,	808	768	16	
August,	1324	1121	32	
September,	1495	1461	39	
October,	1211	1173	33	
November,	1102	1085	41	
December,	1124	1058	41	Mortality.
	10612	10002	380	1 in $27\frac{31}{95}$
1827.				
January,	1069	1082	55	
February,	814	784	53	
March,	784	803	47	
April,	499	568	21	
May,	492	463	26	Mortality.
	3658	3700	202	1 in $19\frac{42}{101}$
			Total mortality,	1 in $23\frac{516}{582}$

The following table shows the comparative influence of the hospital and the tents over the mortality of the epidemic:—

	House.			Tents.		
	Adm.	Dis.	Died.	Adm.	Dis.	Died.
From 4th Aug. to 4th Sept.	660	610	16	432	262	7
5th Sept. to 4th Oct.	925	922	28	570	539	11
5th Oct. to 4th Nov.	753	730	18	458	443	15
5th Nov. to 4th Dec.	702	692	22	403	392	19
5th Dec. to 4th Jan. 1827.	663	627	28	461	424	13
5th Jan. to 4th Feb.	655	662	37	414	420	18
5th Feb. to 4th March,	511	487	29	303	297	24
5th Mar. to 4th April,	538	534	26	246	269	21
	5407	5264	204	3286	3046	128

The information derived from dissection in this epidemic was limited by the regulations of the Cork Street Fever Hospital, which do not permit examinations. To supply this defect, however, Dr O'Brien gives the results of six inspections at the hospital of Sir Patrick Dun, and Dr Reid gives those of seven in the Kevin Street Hospital. We give the table of the former gentleman, and the statements of the latter in the tabular form :—

Name, Date, &c.	Head.	Chest.	Abdomen.
Mary Magennis, 50. Nov. 23.	Thick fluid between *dura mater* and surface of the brain; fluid between the arachnoid and *pia mater;* red patches from effused blood on the surface; the medullary part of the brain and cerebellum profusely dotted by red spots.	Pericardium contains half an ounce of serum; heart distended with fluid blood; lungs do not collapse, showing obstruction in the bronchial tubes.	Stomach distended with air; the serous membrane generally inflamed; small intestines vascular and injected; liver diseased, and adherent to diaphragm; spleen soft and pulpy.
Eliza Grogan, 21. Dec. 23.	On raising the cranium much dark blood flowed from torn vessels; effusion of jelly-like fluid, and of blood beneath the arachnoid, which is thickened, and presents flakes of firm lymph on the surface; ventricles contain fluid, but are not distended; *theca vertebralis* full of serous fluid.	Viscera sound.	Viscera sound.
Henry Stokes, 20. Feb. 12, 1827.	On raising the *d. mater*, fluid escapes; ventricles contain one ounce of fluid; vessels injected; substance of brain very firm.	Viscera sound.	Viscera sound.
B. Gahan, 43. March 17, 1826.	Thick fluid beneath *d. mater;* fluid between arachnoid and *p. mater;* brain firmer than natural. Fluid in ventricles, and at the base of the brain.	Viscera sound.	Viscera sound.
William Black, 23. October 3, 1826.	Brain healthy.	Viscera sound; bronchial mucous membrane unusually vascular.	Gastric mucous membrane bloodshot, and marked by patches of effused blood; duodenum and jejunum similar; liver, &c. healthy.
Mary Devine, 20. Dec. 27, 1826.	Arachnoid opaque; jelly-like fluid beneath, most abundant at the top of the hemispheres; vessels not very turgid; but brain firm.	Viscera sound.	Viscera sound.
Ann Watson, 19. Jan. 9, 1827. Died on 13th.	*D. mater* extremely vascular; extravasated blood and coagulable lymph covering the entire right hemisphere, and depressing its middle; he-	Mediastinum and heart loaded with fat; much red fluid in the pericardium; left ventricle flabby;	Stomach distended with air; dark spots on the mucous membrane of small arch; duodenum,

Name, Date, &c.	Head.	Chest.	Abdomen.
	morrhage traced to a small vessel at the side of the longitudinal sinus; no extravasation in left hemisphere; cerebral substance injected, and effusing, when cut, fluid blood.	walls thin, and cavity enlarged, containing air, but no blood; left auricle containing air; right auricle distended by venous blood; right v. natural; inner surface of aorta dyed pink; texture softened.	and other bowels natural; omentum loaded with fat; a small hydatid in left ovary; liver not enlarged, but deeper red than natural; pancreas injected.
Catharine Hannon. March 9. Died on 13th.	*D. mater* brownish yellow; yellow fluid between the arachnoid and *pia mater;* substance of the brain yellow; nothing remarkable in the ventricles.	Viscera healthy.	The mucous membrane of a small portion of the ileum injected; viscera otherwise natural.
William Ludlow. Died March 29, 1827.	Medullary substance of the brain injected, and when divided, discharged freely fluid blood; yellow fluid between the *d.* and *p. mater;* the latter easily separable from the convoluted surface.	Viscera healthy.	Abdominal fat abundant; peritonæum sound; mucous membrane of the ileum presented patches of congestion 4 or 5 inches diameter, with tendency to ulceration.
Owen Brady, hotel-waiter. Died Jan. 23.	Serous blood discharged when separating the scull cap; glairy fluid found between the arachnoid and *pia mater;* patches of injected vessels over the anterior lobes; ventricles distended with serous fluid.	Viscera healthy.	Liver such as is seen in persons habituated to excess in spirituous liquors.
Peter Williams.	Viscera healthy.	A large quantity of purulent matter like curds of cream in left pleura; no adhesions; right lung disorganized; old adhesions.	Viscera healthy.
Master—	Not examined.	Lungs healthy.	Abdomen tumid; integuments green; inferior parts of trunk and extremities quite black; peritonæal coat of the viscera covered with a yellow curd like matter; much pus and sanies in the cavity; liver studded with a crystalline miliary eruption, similar to that which appeared on the back and shoulders during the disease.

Though we here place before the reader these results of necroscopic examination, we cannot deny that they throw little new light on the intimate nature of the disease. The appearances detailed by Dr O'Brien indicate rather the effects of the febrile process than the nature of that process; and those recorded by Dr Reid are to be viewed principally as accidental consequences supervening during the course or after the termination of that process. It may indeed be argued, that, unless the fever had preceded, these appearances of morbid action would not have followed. The febrile action was a necessary condition to the production of the subsequent effects. These effects are regarded, in the spirit of some of the old pathological notions revived by Dr Reid, as the result of fever thrown upon some peculiar texture or organ. Thus he imagines that the febrile action falling on the arterial system may soften its texture and dispose to hemorrhage, as is sometimes seen from the vessels of the nose and rectum.

" When the result of the disease," Dr Reid proceeds to say, " has fallen on the substance of the brain, this organ after death exhibited a most remarkable state of congestion. On cutting the medullary mass a quantity of thin blood, apparently in a dissolved state, was poured from innumerable points. These cases were by far the most rapidly mortal. Some have occurred to my observation when this state of the brain was about to commence, and before many minutes elapsed the progressive changes towards death took place, while I was standing by the patient. In all the cases of this kind which I have examined there were observed patches of several inches in extent of a dark colour upon the ileum. Upon opening this intestine these patches were found to be occasioned by a state of vascular congestion in the mucous surface, sometimes even apparently abrasions were observed. Indeed, in one case there were several perforations, so that the contents of the intestine escaped into the cavity of the peritonæum. In these cases the fatal train of symptoms generally commenced with abdominal pain; but the state of the brain soon rendered the patient insensible to the progress of disease in the abdomen, although he might still be capable of giving a rational reply to the questions of his medical attendant. When the patients have survived a day or two after the result of the disease has been deposited upon some internal part, bands of adhesion were observed; but in the rapidly fatal cases the coagulable lymph and curd-like substance could be wiped off the organ, while the surface appeared sound."

The escape of fluid blood from sections of the brain in the foregoing account demonstrates, as was long ago well remarked by Morgagni, the highly injected state of the cerebral capillaries. The occurrence of inflammation and ulceration of the intestinal mucous membrane in the same cases is an interesting fact, confirming the observations of Petit and Serres on the entero-mesenteric fever, those of Andral, and those of Bretonneau. A similar confirmation we have occasion to notice in the pathological researches of Dr Bright; and perhaps it would be unreasonable now to question the principle, though originally stated too unconditionally by Broussais, that one of the tendencies of the febrile process is to produce inflammation of the intestinal villous membrane. That this inflammation affects chiefly the Peyerian glands is a point which may be regarded as established by the researches of Petit, and Serres, and Bretonneau. To this subject, however, Dr Reid appears not to have directed his attention. As far as can be discovered from the account before us, this morbid state of the intestinal villous membrane appears to have taken place towards the close of the disease.

From the little communicated regarding the peritonæal affection in the conclusion of the preceding extract, this also it appears takes place towards the termination of the disease. But as it is certain that this peritonæal inflammation is not a uniform consequence of fever, it would be very desirable to ascertain the circumstances under which it most generally takes place. To say, as Dr Reid seems to do, that it is a deposit or result of the febrile action, obviously does not explain its origin. For were it an essential or genuine result, it would take place in all cases uniformly. Upon the whole, it may be doubted whether it can be viewed in any other light than as peritonæal inflammation succeeding to and complicating the previous febrile attack.

The opinions of both authors on the etiology, or the causes concerned in the production of fever, it is scarcely possible to notice with propriety. For though these opinions, like many others, are illustrated with much ingenuity, they are from their nature not susceptible of very strict demonstration; and it is unnecessary to examine either their merits or their defects. While we admit that to Dr Reid we are indebted for one valuable fact, illustrating the direct influence of putrid animal matter in inducing disease, it is impossible to derive from it any very strong inference regarding the production of fevers. Though the half-macerated skeletons of the well of the Palace of the Holy Inquisition at Valladolid were in all probability the direct cause of the putrid fever with which the regiment quartered in that building was harassed, it is almost unnecessary to mention, that putrid fever appears in many situations in which the water is free from all contamination of this description. While we admit the value of the fact, we desire more perfect evidence of its general and uniform operation.

It is just, nevertheless, to remark, that the theoretical views now stated have suggested to Dr Reid the internal exhibition of a remedial agent, the active powers of which promise a valuable improvement and simplification in the treatment of several dangerous diseases. Reflecting on the principle which Dr Reid conceives correct, that all the deleterious and disorganizing effects of fever result from the operation of a septic morbid poison on the animal textures, he was led to infer that an agent capable of preventing the formation of this poison within the system, or of neutralizing its effects, was likely to be the most efficacious antidote to the disease. The antiseptic powers of the chloride of lime at once suggested that substance as the most likely to fulfil the object required ; and of the remedial effects of this agent he first satisfied himself in dysentery. Having thus ascertained the sanative powers of chloride of lime in bad cases of dysentery, four of which are recorded at the conclusion of the paper, Dr Reid attempted the same remedy in cases of fever which usually proceed rapidly to a fatal termination, and with the most beneficial result. The conditions which Dr Reid appears to think indicated the exhibition of this remedy were while the patient had low muttering delirium, dry, yellow, or brown furred tongue, *subsultus*, small creeping pulse, with a faint purple dirty colour of the cheeks. The manner of using the medicine, which Dr Reid after some trial prefers, is to dissolve 3 ounces of dry chloride of lime in a pint of water, stirring occasionally for 24 hours, and filtering. The strength of this solution, as ascertained by a solution of indigo in sulphuric acid, varied from the rate of 9 to 12 drops, which were requisite to discharge the colour of 25 drops of the indigo solution.

The administration of the hydro-chloride, however, is suited to a particular stage only of fever. In all other respects the treatment by both physicians appears to have been conducted on the usual principles now recognized as the most efficacious. The several branches of the antiphlogistic and cooling regimen in the form of blood-letting, general and local, purgatives, antimonial medicines, shaving the head and the application of cold, are the measures which appear to have been most generally adopted. When depletion had been carried to a great length, Dr O'Brien found the restorative influence of wine in moderate doses highly beneficial in removing the lingering symptoms of fever, and re-establishing the capillary circulation.

The contagious character of this fever was demonstrated in the most unequivocal manner. Of 57 nurse-tenders employed at Cork Street Hospital for the 12 months previous to May 1827, 52 were attacked by fever ; and of this number 15 had second attacks, that is, not relapses, but fevers with long intervals interposed. . It is nevertheless a proof of the small mortality of this epidemic, that of the individuals now mentioned 2 only died. The registrar and matron suffered attacks of fever within the period now defined, and the apothecary underwent a severe assault of febrile dysentery. Of 60 permanent residents in the institution 55 passed through the epidemic disorder.

Among the sufferers by this epidemic, we regret to find the name of Dr Stack, physician to Sir Patrick Dun's hospital, who fell a victim to a second attack of the disorder, caught during the exercise of his professional duties.

Connected with this subject may be mentioned the observations of Dr Jacob on " Internal Inflammation of the Eye following Typhus Fever."

Of this disease, which was originally noticed by Mr Hewson in his work on venereal ophthalmia, Dr Jacob met with between 70 and 80 examples during the epidemic, which forms the subject of the papers already noticed. It consists not merely in iritic inflammation, but in a general affection of the whole internal part of the eye, and especially of the retina. Though it appeared in some instances before the patient left the hospital, in the majority of cases it took place within 6 weeks or 2 months after recovery ; more rarely it appeared 4, 5, or even so late as 8 months after. It was more frequent in the young than in the old. Of 30 cases three only were above 25 ; and in no case was it seen at a later period than 45 years.

Confined in all the cases hitherto remarked to one eye, its commencement was betrayed by *muscæ volitantes*, clouds, and luminous coils or stars,—symptoms which denote disturbance in the circulation of the retina. These in the course of 6, 8, or 10 days, sometimes longer, were followed by the sensation of a black cloud or film before the eyes, when vision seems to have become gradually impaired. About the same time, or soon after, the aqueous humour became turbid, the iris contracted and inflamed ; and with much pain and intolerance of light, the usual marks of iritic inflammation, the pink vascular zone became fully manifest. In the worst forms of the disease the lens became partially opaque, reflecting oblique light, and presenting an opaline amber colour ; and if this proceeded, vision was generally destroyed. Though purulent matter was occasionally secreted in the anterior chamber of the aqueous humour, constituting hypopyon, Dr Jacob never observed either tubercular masses of lymph or abscesses, which are believed to distinguish the syphilitic form of inflammation.

Besides the usual antiphlogistic means calculated to subdue local inflammation and organic irritation, Dr Jacob uses extract of belladonna very freely with the constitutional influence of mercury. Two grains of calomel, with ¼th grain of opium three times daily, or 3, 4, or 5 grains of the blue pill three times daily for 8 or 10 days, generally produced, with mercurial action, decided relief. Of sulphate of quinine, though used by others with advantage, he speaks doubtfully.

The second article to which we shall request attention is a "Pathological Inquiry into the nature of Hydrocephalus, grounded on an attentive observation of the phenomena and of the appearances presented on dissection," by Thomas Mills, M. D. &c.

This paper constitutes one of the most instructive collections of facts illustrating the pathology of hydrocephalus, acute and chronic, that has hitherto appeared. Excellent as are the sketches of Rush and Quin, the works of Cheyne, Yeats, Golis, Carmichael Smith, and Dr Monro on this subject, it is impossible to refuse the present essay the merit of being the best practical commentary on all that has yet been written on this disease. When originally communicated to the association the essay consisted of 20 fatal cases of acute hydrocephalus, and 14 fatal cases of the chronic disease with the necroscopic appearances, and 8 cases of well-marked hydrocephalus, terminating favourably under suitable treatment. From each class of the cases, fatal and favourable, 8 were withdrawn at the request of the committee of publication, so that at present the paper consists of 12 cases of the acute, and 6 of the chronic form, with necroscopic reports, and short but judicious pathological commentaries, and 2 only of hydrocephalus terminating favourably.

On the details of these cases, reports, and comments, it is foreign to our purpose to dwell at length. It is sufficient to mention the principal results to which they lead.

Hydrocephalus Dr Mills distinguishes, like most authors, into acute and chronic, the former varying in duration from 7 to 28 days, the latter from 1 to 6 months. He admits, however, that in the former it may run its course in 3 or 5 days, while in the latter it may be protracted to 1, 2, 3, or even 16 years.

Of the 20 acute cases 12 died before they obtained the age of 6; seven between the 6th and 8th year; and one at the age of 12. Of the 14 cases of the chronic form, 7 died before the age of 4; three between 7 and 8; and four between 8 and 16 years. Of 34 patients, therefore, nearly two-thirds died before completing the 6th year. The average of these cases shows the acute form to be more prevalent than the chronic in the ratio of 10 to 7; and of recoveries 7 out of 10 laboured under the acute form of the disease.

It appears also that these cases establish with considerable certainty a fact which has been hitherto stated with vague generality,—that hydrocephalic effusion is connected with the strumous diathesis. They show that though the disease may attack the healthy children of healthy parents, it is greatly more frequent in the puny and scrofulous, or in children whose parents are scrofulous, debilitated, or worn out by intemperance and irregularity. Traces of strumous disease were found in 22 of the patients examined. These traces were found in the brain in 2; in the lungs in 3; in the liver in 4; in the mesenteric glands in 8; in the spleen in 4; and in the cervical glands in 5. Of those who recovered 6 had no visible marks of scrofula; and the parents of 26 were free from any appearance of this description.

Though Dr Mills concludes from the phenomena of cases, and from the appearances presented on dissection, that in hydrocephalus the brain is the organ primarily engaged, he nowhere gives any very precise view of the nature of the affection. It is, however, manifest from the general tenor of his comments and reflections, that he regards the acute form at least as an inflammatory disease. To the opinion that it is an inflammatory disorder of the brain there is this objection,—that inflammation is known to produce in that substance either pulpy destruction *(ramollissement,)* or suppuration either in cells or in a cyst. Dr Mills seems not to be aware, so far as we can perceive, that the necroscopic reports which he gives in the cases before us, tend very strongly to confirm an opinion which has been familiar to us for some time, and which, we perceive, was also advanced some time ago on the continent,—that the pathological cause of hydrocephalus, acute or chronic, is congestion or inflammation affecting the capillaries of the *pia mater*, and especially that division of it, which, under the name of *choroid plexus*, enters the ventricles of the organ. It is deserving of particular notice, that of the 12 fatal cases in 11 the *pia mater* was more or less vascular, sometimes highly so, and in all with effusion between it and the arachnoid membrane. In one (10) it presented coagulable lymph; in one (3) it presented slight adhesion at the falx; and in one (4) the *dura mater*, that is, its arachnoid covering is stated to be vascular. In one only (5) was the *pia mater* natural. In four of the dissections the choroid plexus is said to be highly vascular or turgid with blood; in two it was pale, in one of which the *pia mater*, and in the other the walls of the ventricles, were highly vascular. In the rest the state of this part of the cerebral membrane is not remarked, an omission to be regretted, considering the injected state of the *pia mater*, connected with the serous effusion into the cavities. In the same manner we find in the six chronic cases that the *pia mater* was in all highly vascular, sometimes with effusion of coagulable lymph, and that in two the choroid plexus was very vascular. It is further worthy of notice, that in a small proportion only was the substance of the brain much injected, and in none were any of the usual consequences of inflammation of that organ recognized. Upon the whole, though it must not be concealed that the positive evidence in favour of this inference is not perfectly complete, it is still sufficiently strong to justify the conclusion, that injection of the capillaries of the cerebral membranes is the most uniform anatomical character of the disease, which terminates in effusion into the ventricles of the brain.

On the treatment of this malady Dr Mills delivers very judicious instructions. Blood-letting, general and local, either by opening the temporal artery, the jugular vein, or the brachial, or by cupping or by leeches, cathartics, antimonials, and calomel with opium, in the order now observed, are the therapeutic measures on which chiefly he relies for the extinction of the unhealthy action. Of opium, he prefers the "watery extract" to the ordinary tincture, as less heating, less narcotic, and more directly sedative. In the treatment of the chronic form he recommends milder measures upon the whole, more liberal exhibition of mercury, more sparing employment of opium, and the use of the means of counter-irritation.

The paper is concluded with observations on the method of *prophylaxis*, in which he is desirous to strike at the root of the evil, by correcting the constitution and habits of the parents. Like many other observers, he finds the causes of all our maladies in the luxurious, intemperate, irregular, or unnatural habits of civil life; and with the view of counteracting their pernicious effects, he recommends foreign residence or travel. Unlike the majority of counsellors on this topic, however, he sends not his patient to the rich fields of France, the vineyards and citron groves of Spain, the classical shores of Italy, or the islands of the Mediterranean. There he conceives vice and luxury, misery and discontent, despotism and slavery equally concur to defeat the object of search. To enjoy at once the advantages of the most perfect, virtuous, and happy form of society, and the beauties of the natural world in unsophisticated purity, he energetically recommends the United States of America. The merits of this advice it is unnecessary to examine seriously. However favourable the varied climate and society of the Union may be to the increase of population, it is certain that diseases of scrofulous origin are neither unknown nor unfrequent.

The next paper to which we shall direct attention, entitled "Observations on the Peripneumonia of Children, by Dr Thomas Cumming," forms a valuable history of a disease of considerable interest to the practitioner. On this malady the first information of much importance was communicated by Dr Cheyne in 1809, and Dr Hastings in 1820; and it is chiefly with the view of adding something to the facts established by these writers that Dr Cumming has digested the result of his experience in the present communication.

Though affecting children of all ages from a few days old to 8 or 9 years, it occurs most frequently between 9 months and 2 years. In children above this Dr Cumming observed it to be generally a sequel of measles, or a complication of hooping cough. Approaching much like catarrh, it presents, when fully formed, marks of a severe lesion of the lungs. The respiration is hurried, laborious, wheezing, and so rapid as to range between 60 and 100 in the minute, with frequent short dry cough, flushing of the face succeeded by a livid swollen appearance, and hard and sometimes full pulse, varying in frequency from 168 to 200. As the disease proceeds, the breathing becomes still more laborious and panting; the wheezing is converted into mucous rattling, with inability to cough; to the livid look of the countenance are added drowsiness and inability to move; the pulse becomes intermitting and imperceptible; the extremities cold; and in the course of 8 or 10 days from the commencement of the attack death takes place by suffocation. When the respiration descends from 70, 80, or 100 to 54, or 48 in the minute, it generally indicates a favourable termination. This takes place generally about the 5th, 6th, or 7th day; and the disease is then rarely protracted beyond a week. When it is continued longer without terminating fatally, it passes into the chronic form, with puriform expectoration, cough, wasting, and the usual signs of pulmonary consumption.

Inspection demonstrates the pathological character of this disorder. The most frequent morbid appearance is increased solidity of the lung, varying from mere vascular injection to complete hepatization. Of this change the posterior inferior portion is the most frequent seat; and while the upper portion may be healthy, the lower may be completely hepatized. The affected lung is then purple-red externally, bright-red and granular in substance, void of crepitation, firm, solid, and sinking in water. The third degree of Laennec, or that of purulent infiltration, Dr Cumming has not met with in this disease.

With the change now mentioned are combined in every case almost traces of bronchial inflammation. The tracheobronchial membrane is red, injected, and covered with viscid sero-mucous fluid;—in cases more advanced with puriform mucus, preventing collapse of the lung. In two cases in which no traces of inflammation could be detected in the trachea or bronchial tubes, the air-cells were filled with puriform mucus, which exuded on making sections of the lung. In one case only of hooping-cough, combined with inflammation of the pulmonic tissue terminating fatally by convulsions, was the mucous membrane of the windpipe, bronchial tubes and cells, free from apparent disease. The more intense the marks of inflammation of the bronchial membrane, and the more considerable the effusion, the less in general is the induration, and conversely.

In a few instances the pleura presented albuminous and sero-albuminous effusions, adhesion, and other marks of inflammation.

In two instances, the lungs were thickly studded with small gray tubercles; and in another, the exterior of each lung presented many tubercles, several of which were in a state of suppuration. In both the pulmonic tissue was indurated, and the bronchial membrane inflamed. In the two former subjects, tubercles were found on the pleura and peritonæum; and the bronchial and mesenteric glands were enlarged; and in one the spleen was as thickly occupied with tubercles as the lungs.

In three instances in which the head was examined serum was found in the ventricles and in the base of the brain.

From the necroscopic appearances above detailed, Dr Cumming justly infers that the disease is a *catarrhal or bronchial peripneumony;*—a combination of bronchial and pneumonic inflammation. He further infers, from the incipient symptoms being generally catarrhal, that it consists at first in inflammation of the bronchial membrane, which is speedily propagated to the submucous or pulmonic tissue.

For the proper treatment of this disorder, Dr Cumming lays down three indications; 1st, to arrest the inflammation before it has proceeded to effusion; 2d, where effusion takes place, to prevent its increase; 3d, to adopt such measures as tend to promote absorption or expectoration.

To meet the first, he recommends blood-letting generally and locally, and properly condemns the prejudices against this remedy in children. His observations on the extent to which this measure should be carried are highly judicious, and merit the particular attention of the practitioner. He seems unnecessarily anxious about the employment of purgatives, which are much less useful in this than in other disorders of children. The antimonial emetic to which he is partial is a useful remedy. But the most beneficial of all, especially when effusion is impending or has taken place, or wherever the expediency of blood-letting is questionable, is tartar emetic, given in minute doses, so as to promote sweating and expectoration. Under this some very bad cases of pulmonary disease in children readily disappear. The paper is concluded with five cases of the disease, illustrated by dissection, and an equal number of favourable ones to demonstrate the method of treatment.

The articles which next may be brought under notice are, the 8th, the 14th, and the 18th. The first is entitled "Cases intended to illustrate the application and utility of the Stethoscope," by Richard Townsend, A. B. M. D., to which the 18th is an appendix; and the second consists of "Clinical observations on Phthisis Pulmonalis," by William Stokes, M. D. &c. &c.

These papers demonstrate the diligence with which the Dublin physicians continue to cultivate the diagnostic knowledge of pulmonary diseases; and prove, if any thing were requisite to do so, the honourable emulation with which they are mutually actuated in advancing the progress of this difficult but interesting department of medical pathology. In the Dublin Reports we had occasion to speak in favourable terms of the papers of Dr Stack, and Drs Graves and Stokes. The three articles in the present volume form valuable contributions of a similar description, and will be studied with attention by all who are interested in the knowledge of pulmonary diseases.

Of the two papers of Dr Townsend, the chief object is to demonstrate the utility of the stethoscope as a diagnostic agent, which is done by describing the particulars, semeiographical and necroscopical, of three cases of fatal lung disease, and the circumstances of two cases of temporary affection of the organs of respiration.

The first of these is an instance of tubercular excavation terminating in pulmonary fistula, secondary pleurisy, empyema, and pneumothorax. The existence of these lesions Dr Townsend had recognized with accuracy during life by the stethoscopic examination of the chest; and the diagnosis was confirmed by inspection after death. In the anterior surface of the left lung, about two inches from its apex, was found a round fistulous opening capable of admitting the little finger, with a defined cartilaginous margin. By the introduction of a probe, it was shown to communicate by means of a series of tubercular cavities, with a large bronchial tube. Behind, near the root of the lung, was another fistulous opening half an inch in diameter, communicating by a sinuous passage with a large tubercular excavation occupying great part of the upper lobe, and receiving also a large bronchial tube. The pleura was coated with foul, opaque, shrivelled lymph; and the air found in the cavity was ascertained by analysis to consist of

Carbonic acid,	-	8
Oxygen,	- -	10
Nitrogen,	-	82

in the 100 parts, not very different from the constitution of expired air, as determined by Allen and Pepys.

The other circumstances of this case, for instance the tuberculated state of the left lung, the enlargement of the mesenteric glands, &c. present nothing of much moment to the accuracy of the diagnosis. The villous membrane of the stomach was quite pulpy, and those of the ileum and colon occupied with patches of ulceration.

In the second case is evinced the candour of Dr Townsend, in so far as the diagnosis was not entirely accurate. The first exploration led to the inference, that the patient had hypertrophy of both ventricles, especially the left. The second, that he had also double *pneumonia.* Inspection showed the heart to be of natural proportions, and though with a pervious *foramen ovale,* yet not such as to allow the communication of the blood of the right and left auricle. The right lung was indurated or hepatized, and occupied with miliary tubercles in different stages of growth. In the upper lobe of the left lung was a cavity as large as an orange, communicating freely with the bronchial tubes; the root of the lung was indurated by tubercles; and the rest of the pulmonic tissue was in the first stage of pneumonia.

Dr Townsend properly enough ascribes his mistake in this case chiefly to imperfect exploration of the chest. The energy with which the beats of the heart were communicated through the solidified lung tended to the inference, that the former organ was diseased. A more careful examination would in all probability have shown him, by the absence of the respiratory murmur, that the lung was really indurated and impervious to air. His failure in detecting pectoriloquy and the excavation must have arisen from no other cause than neglecting to apply the cylinder over the proper part of the chest.

The third case, which is contained in the appendix, is one of pulmonary fistula, with empyema and pneumothorax, originating, to all appearance, in pleurisy, and determined to this mode of termination by the presence of a few tubercles in the lower lobe of the right lung.

After recognizing empyema, pneumothorax, and a fistulous communication, in a young man of 20, otherwise apparently robust, and originally of sound constitution, at the end of 7 days, during which his symptoms had gone on to a most aggravated degree, Dr Townsend was led, from the impending danger of asphyxia, to propose the operation of puncturing the cavity of the pleura. This was accordingly done by Mr Macdowell between the 8th and 9th ribs, about 3 inches from the spine, with the effect of discharging fully 3 pints of yellow, puriform, heavy-smelling fluid, followed by the forcible issue of air at each expiration. By this the patient was much relieved; the metallic tinkling and amphoric humming, characteristic of the combined presence of fluid and air, entirely ceased; though the voice continued to reverberate as in a tubercular cavern. On the day after operation the humming had returned in a slight degree at each inspiration; but there was no tinkling till the afternoon, when, by introducing a female catheter, a pint and a half of chocolate-coloured fluid escaped in jets, which were converted into a continued stream by pressure on the abdomen. This discharge was followed as before with the escape of air, which, however, was less fetid. Though evident relief was the immediate consequence, the frequency of his respiration, 48, and pulse, 140, were unfavourable indications. The breathing became exceedingly laborious, and after a restless and agitated night he expired at an early hour on the following morning.

Dissection showing the right lung collapsed to $\frac{1}{3}$ of its size, attached to the third rib through its whole length by a firm cartilaginous band, adhering also to the diaphragm, but elsewhere free. The pleura was covered by a thick layer of organized highly vascular lymph. In the middle of the lower lobe, on its posterior surface, was a large round fistulous opening, with indurated margins, capable of admitting the finger, occupying $\frac{3}{4}$ths of an inch of the pulmonic tissue, (thickened,) lined with a smooth membrane, and communicating with a large bronchial tube. The surrounding pulmonic tissue contained from 8 to 10 gray semitransparent granular tubercles of the size of small shot. The rest of the lung was more compact and uncrepitating, yet without trace of tubercle.

Dr Townsend justly distinguishes this case of pleuro-pneumothorax from those which take place during the concluding stage of tubercular softening, by the sudden transition of the individual from health apparently robust to the agonies of an acute pulmonary disorder, threatening immediate suffocation. The primary origin of the disease involves, he justly remarks, one of the most important questions in the history of tubercles. Did the few tubercles found in the vicinity of the fistulous opening precede the pleuritic attack, and by their softening cause that inflammation? Did they precede it, and was their softening accelerated by a pleuritic attack suddenly but spontaneously, and independently induced? Or, thirdly, was the formation of these bodies altogether posterior to the pleuritic attack, and was their formation its consequence or effect? These three questions, which embrace all the possible conditions of the problem, present difficulties which it is impossible in the present state of pathology to solve. Whatever simplicity may recommend the idea that tubercles are the result of inflammation, and that, in the present case, they were the effect of the pleuritic attack, other circumstances might with equal justice warrant the inference, that the tubercles pre-existed, and that their softening was accelerated by the pleuritic attack. This, which is the view of the present case adopted by the ingenious author, is perhaps the correct one.

In speaking of the means of relief, Dr Townsend justly remarks, that, when the disease is known to originate in, or be connected with, tubercular disorganization, the operation of puncture of the pleura cannot be expected to be permanently beneficial. It is only in cases of empyema, resulting from genuine pleurisy, unconnected with tubercular destruction, that it can be performed with the hope of effecting a cure. It is on this account that the diagnosis of genuine pleuritic empyema, and that from the rupture of a tubercular cavity into the pleura, becomes a matter of great practical importance.

The next case in the paper of Dr Townsend, which is an illustration of the utility of the stethoscope in recognizing the state of the lungs during spasmodic asthma, may be omitted. In the last the author traces the progress of an attack of pneumonia after fever from hepatization towards resolution and convalescence.

The paper of Dr Stokes is not so remarkable for any novelties as for bringing forward some confirmations, which, however, are very valuable, of various pathological principles already advanced by Laennec, Andral, and others. It contains some cases of tubercular disease of the lungs, variously complicated with bronchial, pneumonic, or pleuritic inflammation, and with intestinal inflammation and ulceration, terminating in fatal hemorrhage.

The first case, that of a girl of 16 labouring under gastric fever, is an example of the deposition of tubercles in the thoracic and abdominal viscera generally. Not only were minute granular bodies, some like vesicles, some solid, found in the right lung, and small white tubercles in the left lung, with injection of the pulmonic tissue; but opaque white bodies of various size were found in the liver; yellowish half-softened tubercles were found in the spleen; and similar bodies, though less numerous, were found in the pancreas, the kidneys, and the womb. Though Dr Stokes admits that the large yellow tubercles in the spleen and liver were the product of some previous affection, he thinks that those in the lungs and the minute vesicular bodies in the abdominal organs were generated during the fatal illness.

It is manifest this is a point which it is impossible to determine either in the negative or in the affirmative. It is perhaps not more difficult, and, upon the whole, equally probable, to imagine, that the tubercular deposition had commenced a considerable time before, the minute ones perhaps subsequent to the larger; and that they had no connexion with the fatal illness, further than rendering the intimate tissue of the organs less capable of escaping without lesion, the peculiar capillary distension which attends the febrile process. Had the lungs and other organs of this girl been free from tubercles, she might have passed through the fever with impunity. As it was, the presence of the tubercles rendered the capillary injection taking place during fever more intense, and consequently more injurious.

The next two cases are examples of catarrh terminating in phthisis. It may be justly doubted, however, whether this be the legitimate title of the disease; in other words, whether the catarrhal affection could be said to terminate in tubercular softening. In the first case, which alone became the subject of necroscopic inspection, tubercular deposition was found in both lungs, an excavation in the upper portion of each, and many of those in the right lung softened; the intermediate pulmonic tissue was red and soft; while that of the left was solid and reddish-gray; and the bronchial membrane was red and firm, without ulceration. Now the catarrhal phenomena with which this case is said to have commenced, are precisely the effects which result from the incipient softening of tubercles, whatever be the remote cause which induces that softening. A person labouring under tubercular disease of one or both lungs is very susceptible of what is called *cold;* in other words, is very frequently harassed with cough and expectoration, which is at this period mucous only. He naturally ascribes it to exposure to cold; and in truth, exposure to a degree of cold, which has no effect on an individual with sound lungs, makes a most serious impression on one with tubercular deposition. In process of time, either with or without such exposure, for the natural tendency of tubercles is, at a certain period of their developement, to soften, this process takes place, and of itself induces, totally independent of cold, inflammation, not only of the pulmonic tissue, but of the adjoining bronchial membrane, and its usual consequence cough and mucous expectoration. That this is the natural, and, as it may be termed, the necessary course of tubercular disease in the lungs, may be demonstrated to a certainty by many facts. In several cases of tubercular softening and excavation which we have had occasion to examine with care, we never failed to observe more or less redness and thickening of the bronchial membrane, not unfrequently complete erosion, with an unusual quantity of frothy serous mucus, the product no doubt of the inflamed membrane. The stethoscopic indications even announce this as the ordinary course of phenomena. The mucous rattle of catarrh both precedes and accompanies the process of softening; and even after pectoriloquy is distinct and the expectoration becomes tubercular, the mucous gurgling in the chest continues, and a large proportion of the expectoration is mucous. In short, it may be stated as a uniform principle of pulmonary pathology, that no tubercle undergoes the process of softening without causing inflammation, at least of the contiguous bronchial membrane, and very frequently of the pulmonic tissue. This is the genuine origin of the catarrh which is said to terminate in phthisis,—a confused and inaccurate mode of expression arising from inattention to the pathological process in which the catarrhal affection depends. These observations are not adduced as new or unknown; for we believe that the ingenious author of the paper before us must be perfectly aware of the facts on which they are founded. But as some misconception appears still to prevail in the relation between phthisical or tubercular catarrh and the disorganizing process, which is not its termination but its cause, this we conceive is not an unseasonable opportunity for endeavouring to place the matter in its just light.

The fourth case in the present paper is most remarkable for illustrating the morbid state of the intestinal tube in the phthisical. The pulmonary phenomena and necroscopic appearances are similar to those of many other cases. The individual had voided at stool about 2½ quarts of fluid blood, and soon after expired. Besides softening of the stomach and enlargement of the muciparous glands of the duodenum, the jejunum presented many, and the ileum fewer circular patches of ulceration with raised edges, evidently the mucous membrane. The ilio-cœcal portion presented many old cicatrices. The ascending portion of the colon was studded with enlarged glands, and presented numerous ulcerated patches, in the interval of which the mucous membrane was thickened and elevated. Though the transverse portion appeared healthy, at the beginning of the sigmoid flexure "was a large patch of recent ulceration extending completely round the intestine. On each side of this patch the mucous membrane had the appearance of ecchymosis observed in the stomach in cases of hæmatemesis." It is very probable that this was the source of the fatal hemorrhage.

Dr Stokes judiciously directs the attention of the practitioner to the fact, that the administration of opiates and astringents, so often pursued in this state of the intestines, which may augment the fever, and accelerate the fatal result, ought to give place to a mode of treatment which proposes to abate inflammation of the mucous membrane and glands, and thereby obviate ulceration. On this head we may be allowed to say from experience, that astringents are invariably injurious in the diarrhœa of the phthisical, sometimes to the degree of inducing acute intestinal inflammation; and that the remedial measures which are most beneficial are small doses of castor oil, alternating with the use of the starch injection.

The fifth case may be regarded as affording some confirmation of the opinion advanced by Broussais, and recently defended with much ingenuity by Dr Alison of this place,—that tubercle is the result of inflammation. In a man of 45, who had taken mercury for a syphilitic affection, symptoms of pneumonia appeared after exposure to cold. These symptoms were aggravated by subsequent injury of the chest, by which three ribs were broken; and from this he had scarcely recovered, when a heavy weight falling on his shoulders, and bending him forcibly forward, was again followed by a recurrence of the pectoral symptoms, for which he was admitted into the Meath Hospital on the 26th June 1827. Two days after this he was found to have a spot of cavernous respiration, with strong resonance in the upper part of the right breast, to which was added the following day imperfect metallic tinkling. He went home, and expired ten days after. The whole upper lobe of the right lung was converted into a large abscess, the walls of which consisted of hardened pulmonic tissue, and were void of the usual cartilaginous lining of the tubercular excavation. Masses of tubercular matter, however, of various sizes, some softening in the centre, were scattered through the lung. The intermediate tissue was hard and reddish gray. In the upper part of the left lung were a few tubercles, and the bronchial membrane was tinged of a deep red colour.

It is remarked by the author, that the production of tubercles in this case was probably preceded by pneumonia, and induced by continued irritation. To this opinion the chief objection consists in the tubercles, which, though few, were found in the left lung, which had not suffered from mechanical injury, and in which, if inflammation did cause the tubercular deposition, it must have arisen from the exposure to cold during the mercurial influence. To this view, indeed, Dr Stokes afterwards adverts, and takes occasion to reprobate the practice of repeated mercurial courses in persons in whom phthisis is likely to take place.

The last case is an example of fistulous opening into the pleura, with empyema and pneumothorax. In every respect, both semeiographical and necroscopic, it bears so close a resembling to the first of Dr Townsend, that it is unnecessary to enter into any detailed account. The tubercular destruction affected both lungs; but the fistulous opening was confined to the left.

Under the same head we turn to the case, or rather cases, for there are two, of open *Foramen ovale*, given by Dr John Crampton.

The first occurred in a young man of 18, who was admitted into the Hardwicke Hospital as a fever patient on the 6th February 1827. From the febrile symptoms he had scarcely recovered, when he was attacked with those of acute rheumatism; and to these again succeeded symptoms denoting disease of the lungs and heart. The stethoscope indicated acute bronchial inflammation with hypertropy and irregular action of the heart. The cardiac symptoms became successively worse; and he expired on the 10th of March, a little more than a month after admission.

With traces of inflammation of the pericardium, the ventricles were found enlarged; the semilunar aortic valves edged with recent fleshy excrescences; the aortic orifice contracted; that of the pulmonary artery enlarged; the auricles dilated; and in the auricular septum an oval depression presenting an oblique or valvular communication as large as the calibre of a goose quill.

In the second case, a man aged 34, in the Whitworth hospital, died with symptoms of phthisis. Besides hepatized and tuberculated lungs, and a large excavation in the left lung, the *foramen ovale* was found open; but the valvular arrangement of the auricular membrane was such, that in ordinary circumstances no communication between the blood of the two auricles could take place.

A degree of openness of the *foramen ovale*, it may be observed, is not uncommon in the bodies of those who die of tubercular disease of the lungs.

The last paper which we shall at present notice is the "Sketch of a Medical Report on the Epidemic Dysentery which prevailed in Dublin in the year 1825, by Dr John O'Brien." It was chiefly in the autumn and early part of the winter of this year that dysentery was epidemic in Dublin. Whether the extreme heat and drought of the summer and autumn of this year could have any influence in the production and diffusion of this disease, certain it is, dysentery, commencing first among the better classes, proceeded with rapid and extended strides to affect the labouring classes. It was about the 15th of August that the registry of Cork Street Hospital, by the increased number of admissions, afforded unequivocal proof of the epidemic diffusion of intestinal disease. After this period it increased rapidly till the beginning of November, when it seemed to have attained its maximum. The account of Dr O'Brien may be given in his own words.

" The duration of the disease when it terminated favourably varied from 2 to 6 weeks; and of the fatal cases 4 died in the acute stage, that is within the first three weeks of the disease, and five lingered on to the chronic state, under which they ultimately sunk. The ages of the majority varied from 20 to 40; none were under the age of 20; and 2 only (fatal cases) exceeded the age of 40. It was not a little remarkable that persons of middle age, and in the vigour of life, seemed to have been the principal sufferers in the present epidemic, and that the young and aged escaped in a greater proportion than usual. In the males, it may be observed, the mortality was less than in the females."

The disease was generally attended with febrile symptoms. But, as in all similar cases, it sometimes happened, that the febrile symptoms preceded the dysenteric so far that the disease was taken for fever; in other cases the dysenteric disorder was actually a consequence or sequel of the fever. In one or two instances only was there any ground for the suspicion of contagion.

The pain, which was in general seated in the prominent part of the hypogastric region, a little below the navel, was more frequently fixed than intermitting. The discharges were dark brown, sometimes approaching to tar, and in one or two cases like coffee-grounds.

The general plan of treatment appears to have been blood-letting to the extent of 12 or 14 ounces, followed by immersion in the warm bath, frictions of the person, but especially of the belly, with camphorated oil, and swathing by a flannel roller; and, lastly, ten grains of calomel with two grains of opium, and occasionally antimonial powder. This course on the first evening of treatment was followed next morning by a purgative draught consisting of castor oil, tincture of rhubarb, and tincture of opium, or of infusion of senna and salts with tincture of rhubarb and tincture of opium. If the symptoms did not give way, the blood-letting and the warm bath were repeated, and the calomel and opium, with purgatives, were continued till the gums became tender, after which the exhibition of opium alone generally effected a cure. It is amusing to find the author gravely giving his testimony in favour of the non-irritating qualities of castor oil, which it appears some practitioners in that country regard as an acrid substance. To such an opinion nothing but prejudice and ignorance could give rise. No man who ever administered castor oil in half a dozen or half a score of cases could ever continue to entertain it.

The most valuable part of the paper is the abstract of the dissections at Sir P. Dun's Hospital. The descriptions are so similar to those of all other cases of dysentery that we need not repeat them in detail. It is sufficient to say, that in 8 of 12 cases the villous membrane of the small intestine, principally the ileum, was inflamed or ulcerated in patches; that in the whole twelve the colon was vascular, inflamed, ulcerated, eroded, or otherwise diseased; that in one it was gangrenous, and in two much contracted; that the rectum was much inflamed and abraded; and that the liver was diseased in six and the spleen in three. In all the cases also the peritonæum contained more or less serous or sero-albuminous fluid.

The above papers form the principal ones on subjects in medical pathology. We should now proceed with the examination of the others, which are highly interesting and not less deserving regard. This, however, we must defer for the present, in favour of other matters which claim consideration. We, therefore, close the volume, with the hope of soon recalling the attention of our readers to subjects on which we cannot doubt they feel as much interest in receiving information as the industrious members of the Dublin Institution have in communicating it.

Art. III.—*Surgical Observations on the Treatment of Chronic Inflammation in various Structures, particularly as exemplified in the Diseases of the Joints.* By John Scott, Surgeon to the London Ophthalmic Infirmary, and Assistant-Surgeon to the London Hospital. London, 1828. 8vo. pp. 291.

THE treatment of chronic inflammation, and its consequences in the textures forming the different articulations, has long been a task of such extreme practical difficulty, as in a large proportion of cases to make it be abandoned for the more certain and less tedious alternative of removal by the knife. When a joint affected with incipient disease is submitted to the surgeon, the first proceeding is to pursue the usual routine measures, the chief object of which is to check inflammation and to obviate its products. The local detraction of blood, repeated according to its apparent effects, the application of blisters, tartar emetic, or sulphuric acid ointment, caustics, or moxa to produce ulceration, setons and other counter-irritants, not omitting dry friction and the *douche*, are the means usually tried with the view of subduing the inflammatory action in the capsular cellular membrane, in the synovial membrane or articular glands, or in the cartilaginous extremities of the component bones. When these resources of surgery are exhausted unavailingly, the joint, if removeable by amputation, is consigned to the knife; or if beyond the reach of this alternative, as in the vertebræ and the coxo-femoral articulation, it is abandoned to what is termed the powers of the constitution, which in a large proportion of cases are totally inadequate to effect a cure.

That this is the usual course of events, with regard to the management of diseased joints, every practical surgeon will be ready to admit. The cases which can be justly said to be cured are few indeed. In still fewer instances, after all means and appliances have been diligently employed, some degree of recovery takes place; and after long disease of the limb, the patient, if he does not recover the motion of the joint, retains at least a member which answers as a means of support. Amputation, when admissible, though the means of removing the diseased parts, is not entitled to the character of a cure. When inadmissible, the patient is left to his fate, or gets well without it.

If we inquire into the causes of the inefficient state of this department of surgical therapeutics, they will be found to consist partly in the organic peculiarities of the articular textures, partly in the surgeon neglecting to accommodate his measures to these peculiarities. What these organic peculiarities are, it may be said, is perhaps not altogether ascertained. But enough is known to justify the inference, that, considering the variety of textures composing a joint, considering its complicated structure and its great extent of motion, when the inflammatory process is once established in one or more of these textures, it is very difficult to keep it under control, and almost impossible by the ordinary means to eradicate. Whether it depend on the circulation of these textures, or on their organic sensibility, certain it is that the inflammatory process is attended with less acute suffering, and advances much more slowly than in other textures. But in compensation it proceeds with a great deal more certainty; and without very urgent external indications, it gives rise to changes in organization and structure, which powerfully resist all the ordinary sanative measures. Condensation of the synovial membrane, deposition of granular lymph on its surface, or of sero-albuminous fluid in its cavity, effusion of sero-gelatinous fluid into the capsular cellular tissue, are a few of the changes which tend to render the influence of remedial means less powerful than in other situations. If to these be added erosion of the cartilages, chronic inflammation of the cancellated structure of the epiphyses, and ulceration or caries of these parts, it is not difficult to perceive how little influence the measures usually put in practice can have in restoring the sound state of so many different textures. It too often happens that the surgeon has to contend with the morbid products and effects of inflammation, not the process itself; and if his measures are not both seasonably employed and steadily persevered in, they avail as little as if they had not been used at all.

The frequent unhappy results of these measures, doubtless, have contributed to beget in the minds of surgeons that impatience of the influence of remedies—that hopeless indifference to their effects,—which often induces them to condemn precipitately to the knife a joint, which a little more perseverance might have saved, or to give up a case which, under a new combination of circumstances, has terminated more favourably than could have been anticipated. It may not be possible to remove at once all misconception on this head, and to render the treatment of diseases of the articulations at once uniform and efficient. It is due, however, to the author of the present volume to say, that he has great merit indeed in directing the attention of surgeons to a very important practical fact in the management of this class of diseases. Without denying or underrating the value of other means of removing chronic inflammation in the articular textures, the object of Mr Scott is to show that too little attention has been paid to two circumstances of the first moment,—perfect rest, and uniform mechanical support and gentle pressure of the affected joint.

It is unnecessary to enter into a formal view of the whole of Mr Scott's useful and instructive work. The general principles with which he introduces the consideration of the subject are familiar to surgeons; and it is manifest that his sole reason for premising these observations is to prepare the mind of the reader for the particular application which it is the proper object of his work to make known. In imitation of Mr Baynton of Bristol, who inculcated strongly the advantage of mechanical support by plaster and bandage in healing sores of the extremities, Mr Scott is at some pains to show, that the method of that gentleman, though a valuable improvement, is, however, insufficient, and sometimes injurious, by rendering the support only partial. To be useful and effectual in restoring the healthy circulation, Mr Scott justly contends, that the pressure ought to be general and uniform. While Mr Baynton recommended the plasters to be applied firmly below and above the ulcer, but without encompassing the entire limb, Mr Scott surrounds the whole member from the lower part upwards, with the view of giving equable and uniform support to the vessels in every part of it. In this we are satisfied there is both reason and experience. We know not that Mr Baynton could have foreseen the extreme to which his doctrine was to be carried; nor can we say whether what we are now to mention, was a necessary result of his method of applying the adhesive plasters. But more than once have we seen limbs treated according to that method, in which, indeed, the ulcer was healed, but with such an unsightly contraction of the fleshy parts of the leg, with such a depressed shrivelled cicatrix, as to communicate the idea, that part of the muscle and cellular membrane must have been absorbed, destroyed, or consumed during the process of healing. To obviate a result so unseemly, the method of the present author is doubtless much better calculated; and we may assert from trial, that it posseses all the advantages without the evils which result from drawing the plaster-slips with such extreme straitness over the sore to be healed. In short, the method recommended by Mr Scott, which consists in applying the slips uniformly, but regularly, round the limb, and supporting the whole by a bandage of uniform pressure and support, is that which may in all instances be most effectually employed for healing ulcers which depend on chronic congestion of the vessels of the lower extremity.

This, however, though not entirely irrelevant, is a digression; and we proceed with the proper subject of the work.

Though the exact nature of the diseases incident to the joints has become pretty well known by the researches of Mr Ford, Mr Brodie, and others, Mr Scott properly recalls to the recollection of the reader the principal pathological facts which the practical surgeon should bear in mind. The structure of all the articulations is so much alike, that, making allowance for some differences in the simplicity or complication of the articular apparatus, the same morbid processes nearly are common to all, and require to be treated on certain general principles. Synovial membrane, capsular ligament, cartilage and bone, which enter into the structure of every articulation, when subjected to the inflammatory process, undergo in different situations nearly the same changes. The most important difference demanding attention is that which arises from the texture primarily affected, which in one may be the synovial membrane, in another the cartilages, and in a third the bones.

The succession of morbid changes which takes place in each of these cases is well distinguished by Mr Scott.

In the ordinary disease of the knee-joint, in which the process commences in the capsular synovial membrane, increase of vascularity, diminished secretion of its natural fluid, swelling of the membrane, an unnatural quantity of morbid fluid, effusion of lymph in granules, thickening and induration of the synovial capsule, and jelly-like effusion into the articular cellular tissue, are the principal changes which successively take place. If the limb is not removed, or the patient cut off by the constitutional disorder, the extension of the disease to the cartilaginous synovial membrane at length terminates in erosion of the cartilages, with the production of sanious blood-coloured sero-purulent matter, which finds its way to the surface with great constitutional disorder. The further continuance of this process, if it does not utterly terminate the life of the individual, may at length proceed to a species of anchylosis, in consequence of the destruction of the articular cartilages. In some instances, however, in which we have seen this process going on, the pain which it causes is so severe and unremitting, more especially during the night, that the patients have actually solicited amputation as the only means of putting an end to their sufferings.

When inflammation takes place primarily in the cartilages, which it occasionally does, speedy ulceration or erosion is the result; and while this may cause, on the one hand, secondary inflammation of the synovial membrane with all its consequences, it may induce on the other caries of the cancellated structure of the epiphyses.

The inflammatory process taking place in the *cancelli* eventually leads to similar results, with this exception, that the periosteum and superficial cellular tissue sympathise with the morbid process in the bone sooner than the cartilages and the synovial membrane; and hence superficial abscesses communicating with the bone generally precede the formation of sanious or sero-purulent fluid in the cavity of the joint. The first stage of this form of disorder Mr Scott represents to consist in preternatural softness of the cancellated structure from deficiency of earthy matter. This morbid softness, however, which he thinks is followed by increased vascularity, is more likely to be its effect. The substitution of a straw-coloured fluid, which is converted into caseous matter, for the marrow of the cancelli, is an event which generally leads to caries and death of the bone.

After this general view of the pathological changes incident to the textures composing the articulations, the author proceeds to the practical part of his work. His observations on the constitutional treatment, which are judicious, but neither novel nor peculiar, may be omitted. His instructions on the local treatment merit more immediate attention.

Premising the necessity of absolute rest as an indispensable condition, and to be continued so long as the least motion causes pain, Mr Scott endeavours to determine the circumstances under which blood-letting may be employed with advantage, and to define the extent to which it may be carried. In emaciated patients, whose constitutional powers are considerably impaired, local bleeding, instead of abating, he thinks, aggravates the disease; yet subsequently in the same subjects, after their general health has been somewhat restored by suitable treatment, local bleeding affords decided benefit. But it is only where there is much pain and heat in the joint that it should be employed.

When a sufficient quantity of blood has been removed by cupping or by leeches, the common bread and water poultice is the best application. Of cold lotions he disapproves, as tending rather to repress than encourage the cutaneous circulation. If the return or continuance of pain and heat render it requisite to repeat the local bleeding, this may be done after a suitable interval; but when the urgent symptoms disappear, and the disease remains in the chronic state, there is no longer room for active measures.

So far the treatment recommended by Mr Scott is not materially different from that pursued by the generality of surgeons. In this state of a diseased joint, the usual method is to have recourse to means of counter-irritation, that is, to remedies which, by exciting more or less superficial inflammation, may counteract and oppose that which is going on in the deep-seated textures of the joint. The means by which this is effected, it is well known, are blistering, pustulation by tartar emetic ointment, erythema by sulphuric acid ointment, issues either by the actual or the potential cautery, moxa or caustic potass, or the introduction of a seton.

Without absolutely and invariably condemning these applications, Mr Scott contends that their influence is so uncertain, and so little under regulation or control, as to deprive them almost entirely of any little advantage which they might otherwise confer. All these applications, he maintains, are attended with a degree of positive and certain irritation, which may be so considerable as in many constitutions to aggravate seriously the sufferings of the patient. The probability of their counteracting the deep-seated inflammation is at all times problematical, since it depends not only on the stage of the disorder, but on the texture affected. Thus any of the means of counter-irritation may exercise considerable influence on the disease while there is yet no morbid product which does not admit of absorption, and while there is no very serious injury inflicted on the structure of the capsular ligaments, or the articular cartilages. But scarcely any means of counter-irritation can avail, where much granular lymph is deposited, where the synovial capsule is much thickened, and the capsular cellular tissue injected by jelly-like fluid. It is further no trifling objection to the employment of the most powerful counter-irritant, *e. g.* the caustic issue, that though in some instances it is highly beneficial in abating internal pain, in others, the inflammation which it induces is propagated to the articular textures, and the malady which it is intended to alleviate is in truth aggravated many degrees. Instances of this have been observed by several, and Mr Scott relates one in the present work, (p. 131.) The relief also produced is sometimes only temporary; and even in the cases to which Mr Brodie found the caustic issue most applicable,—those of ulceration of the cartilages, though the patient maintained his limb in a state of absolute quietude, soon after the issue had ceased to operate, the symptoms returned in their original severity. These objections apply equally to blisters, to moxa, and to all the forms of counter-irritation.

Conceiving, therefore, that the means already in use are either inefficient, or unfit for the purpose, in the treatment of morbid joints, Mr Scott abandons them, and substitutes in their place the following method:—

> " In the first place, the surface of the joint, suppose the knee, is to be carefully cleansed by a sponge, soft brown soap and warm water, and then thoroughly dried; next, this surface is to be rubbed by a sponge soaked in camphorated spirit of wine, and this is continued a minute or two, until it begins to feel warm, smarts somewhat, and looks red. It is now covered with a soft cerate made with equal parts of the *ceratum saponis* and *unguentum hydragyri fortius cum camphorâ*. This is thickly spread on large square pieces of lint, and applied entirely round the joint, extending from at least 6 inches, above and below the point at which the condyles of the femur are opposed to the head of the tibia; over this to the same extent the limb is to be uniformly supported by strips of calico, spread with the *emplastrum plumbi* of the London Pharmacopœia. These strips are about 1½ inch broad and vary in length; some are 15 inches, others a foot, others half these two lengths, and the shorter or longer are selected, according to the size of the part round which they are to be applied. This adhesive bandage ought to be so applied as to preclude the motion of the joint, prevent the feeble coats of the blood-vessels from being distended by the gravitation of their contents in the erect posture, and thereby promote their contraction. Over this adhesive bandage thus applied, comes an additional covering of *emplastrum saponis* spread on thick leather, and cut into four broad pieces, one for the joint, the other for the back, and the two others for the sides of the joints. Lastly, the whole is secured by means of a calico bandage, which is put on very gently, and rather for the purpose of securing the plaster, and giving greater thickness and security to the whole, than for the purpose of compressing the joint. This is an important point, as otherwise an application which almost invariably affords security and ease, may occasion pain with all its attendant mischief.

Of this treatment the objects, so far as we understand Mr Scott, are threefold; first, to induce a gentle but general excited state of the cutaneous and superficial vessels of the joint; secondly, to prevent all motion in the parts; and, thirdly, by this and by the mechanical support to abate the chronic congested state of the vessels. When the first object is not sufficiently attained by the camphorated spirit he allows the inunction of tartar emetic ointment. In cases where the ordinary applications appear insufficient to prevent all motion, he employs pasteboard splints externally to the plasters. Thirdly, he contends that the antiphlogistic effect of the camphorated spirit, and the complete quietude of the joint, is powerfully assisted by the influence of the camphorated mercurial ointment. Conceiving the power of this agent in subduing local inflammation to be unequivocally demonstrated in its effects on iritis and other inflammatory processes, he contends, that a gentle local application conducted so as not to affect the system, as in enlarged glands and several inflammatory tumours of which it causes the disappearance, is sanctioned by every principle of therapeutics. On the one hand, the other remedies are not so efficacious when the mercurial ointment is omitted; on the other, it may be employed without inducing salivation, not only without injury but with the most salutary effect.

The applications above mentioned Mr Scott recommends not to be often removed. This, indeed, they neither require nor admit. The time for removal may be regulated by the recurrence of symptoms requiring local blood-letting, or the discharge of matter, if there be abscesses or sinuous openings, or by the cessation of the superficial irritation. They should seldom remain less than a week, and in the generality of instances they may remain a fortnight or longer.

The mode of management now described Mr Scott represents, under slight modifications, as applicable to every form and stage of articular disease, and infinitely more efficacious than any other combination of remedies hitherto in use. The only exception to their constant and free application are the symptoms indicating acute inflammation of any of the articular textures; and this of course it is requisite to control by local bleeding by means of leeches or cupping, followed by poultices. When this has been subdued, and the morbid action is brought to the chronic or passive state, the means of mechanical support and compression, modified, nevertheless, according to the texture most affected, should again be put in practice. When the synovial membrane is the seat of morbid action, the counter-irritation should be slight, and sufficient only to expedite the mercurial action; and the mechanical support should be moderate but very accurately applied. When the cartilages are chiefly affected, on the contrary, though blood-letting is beneficial, powerful and long-continued counter-irritation is requisite; and adaptation of pasteboard splints, to prevent all motion whatever, is indispensable. When the disease is confined to the bones, Mr Scott thinks loss of blood less beneficial than in disease of the soft parts. The local use of mercury, with considerable cutaneous irritation, and perfect immobility of the joint, constitute the proper treatment.

On a question of great practical nicety, whether, in the case of matter formed in the cavity of the joint, an opening should be made for its evacuation, Mr Scott infers, after Mr Brodie, from the result of some observation, that in almost all cases it is an injurious measure. When the parts are much inflamed and painful from distension, the opening, if made, heals by the first intention, the textures of the joint undergo secondary inflammation, and purulent matter is secreted with so much rapidity, that in a few days it is more distended than before; and with increased pain the constitutional disorder is violently aggravated. He contends, on the contrary, that the mode of treatment above delivered is suited equally to the suppurative as to the inflammatory stage; that the abscess, if first reduced by antiphlogistic means to the chronic state, is by pressure soon diminished so much in size that the secretion is brought within the powers of the absorbents; that it may disappear without evacuation; and that, if it does not, the progressive advancement of the matter to the surface, and its escape by spontaneous ulceration, is a safer and less injurious mode of termination. Hectic fever, he states, does not appear, generally speaking, till the abscess is opened or has broken.

In the treatment of the sinuous openings which succeed this event, he disapproves of stimulating injections. If the bone is merely carious, and not dead, it is unnecessary to kill it, he argues, and cause an exfoliation which would not have otherwise taken place. If it be really dead, it ought not to be removed by art, which may induce more extensive exfoliation instead of removing that already dead, but left to the absorbents, which will eventually effect its separation.

In giving the above account of the method of treatment recommended by Mr Scott, we have refrained from expressing any opinion on its actual merits. This we do that our readers may have a clear and just idea of its several parts, independent of any remarks, which might tend to influence either in one manner or another. Whatever we have to offer on this topic must be short and rather cursory.

It is, in the first place, manifest that the excellence of two of the general sanative principles laid down by Mr Scott, those of absolute rest and mechanical support, can by no means be questioned. Their actual influence in counteracting chronic inflammation, or, what is the same thing, irregular distribution of blood in the capillaries, is admitted by all practical surgeons. So far there cannot be two opinions on the expediency, nay, the necessity of these means in the treatment of diseased joints; and, in point of fact, they have been more or less applied in practice by all good surgeons who found their patients resist amputation, or where it was otherwise impracticable. These remedies, however, it must be confessed, have never been employed in the systematic and assiduous manner in which the present author has persevered in their application. To Mr Scott, therefore, chiefly belongs the merit of demonstrating practically the great influence of these agents, and of showing the profession how much may be done in these troublesome and dangerous diseases, by the persevering use of judicious measures. Next to the merit of discovering a new remedy, that of improving and demonstrating the powers of the old, is the greatest service which can be rendered to the practical application of the healing art.

Secondly, It may perhaps be objected to the method of the present author, that its effects are much overrated ; that it may answer in ordinary incipient cases of joint disease, but will totally fail in the complicated and serious ones ; and that it is absurd to suppose that surgeons of acknowledged skill and experience could be so weak as to relinquish the sure remedy of amputation in formidable cases of articular disease, for measures so simple as camphorated and mercurial embrocations, and envelopes of plaster and bandage. It is not our intention to defend in every thing the method of Mr Scott ; for that support we do not think it requires. Something on this topic we have already hinted at the beginning of these observations. If, however, the merits of his method of treatment require confirmation, the reader will find it in the most satisfactory form in the cases given in the appendix. In almost every variety of articular disease, some of them manifestly very severe, complicated, and far advanced, the effects of his mode of treatment appear to be indeed extraordinary. We believe it has been long practised with great success by the father of the present author, —a surgeon not unknown at Bromley in Kent. Evidence, of course, from this source must be much the same as evidence from Mr Scott himself, unless so far as the success of Mr Scott Senior is in many instances its own eulogium. To render this confirmation still more complete, we conceive nothing more is requisite than for Mr Scott to induce some of his professional friends, less sanguine than he is in its favour, to try it in such cases as they conceive themselves warranted for so doing. When this has been accomplished with the effect of verifying his views, it will become every practical surgeon to adopt with diligence a method which promises so much benefit in diseases so little under the control of ordinary means.

Thirdly, Whatever we say in reference to those of the profession who are doubtless entitled to the best and most unequivocal evidence, on a question of practical importance involving the limbs, very often the lives of a large proportion of their patients, sufficient proof of its beneficial result is daily coming under the observation of many. Without being credulous, we may be allowed to say, that we have seen or known several instances of serious articular disease, in which recovery was effected, and the limb was preserved, not under exactly the same but very similar management, sometimes under regular, more frequently under empirical practitioners. Similar facts must doubtless be well known to others. If Mr Scott, by explaining the principle and illustrating the practice, can convert into an uniform and rational mode of treatment, what has hitherto been capricious, irregular, and unsteady in its application;—if he succeed in realizing in the majority that which has hitherto been effected in one or two individuals only;—he merits in a liberal degree the esteem and the gratitude both of surgeon and patient. As such, the method proposed in the volume before us deserves, and we trust will obtain, a candid and attentive reception from the practical surgeon.

ART. IV.—*Transactions of the Medical and Physical Society of Calcutta*, Vol. III. pp. 451, 8vo. Calcutta, 1827.

THE energy of our brethren in the East continues unabated. Already we have had the third volume of their transactions for some time before us. Nor is it inferior either in variety or interest to those which preceded it.

On the important subject of medical topography and endemic diseases, there are many most valuable contributions. Dr James Ranken takes a general view of public health in India. He considers as the primary cause of the endemic disorders to which Europeans are subject in India, an excess of heat, amounting on an average to 30° above the temperature of Great Britain. A most gloomy picture is given of the progress of public health in India. According to Dr Ranken the health of our settlements in India may be represented as passing through three stages. In their original state unhealthy, by cultivation they experience a short and deceitful improvement, which is followed by increased and perpetual insalubrity.

> "An officer is ordered to fix on a fit spot, within certain limits, for a military post. He is not supposed qualified to prognosticate sickness or health from the aspect of the soil. With him, the professional interests of the troops are naturally paramount. As securing the channel of easy conveyance for stores and provisions; affording materials for building; yielding forage to the cattle; commanding ample means of irrigation, and more extended cultivation for all; he thinks the bank of a river, surrounded by a well-wooded country, an invaluable acquisition. The new station, thus situated, is for some time unhealthy. Puddles which offend the eye, stagnant water, grass, and jungle, are by degrees removed from the occupied

and adjacent ground. The period of health now commences. It continues until the causes of sickness are unwittingly renewed. These gradually reappear, as tanks are formed to accommodate the natives: the neighbouring fields are turned into artificial marshes, and ordure accumulates, with the thousand units that swell the aggregate pollution of the air, productive of camp diseases. Meanwhile the officers enclose their allotments of ground with fences and ditches, planting as many trees in the areas as will take root. Gardens, properly manured, are laid out among the houses. In due time, when the station begins to obtain praise for its beautiful avenues and excellent vegetables, sickness falls apace on the inhabitants. In proportion as the population increases from influx, and the conveniences of life multiply, insalubrity becomes more and more prevalent. Neemuch and Nusserabad, having gone through the first sickly stage, are now in the healthy one. Almost every post on the Ganges is arrived at the point to which all others tend, of perpetual sickliness. I am not unaware of partial objections, and accountable exceptions to this sequence of events: but I do not think that the general fact can be controverted. The principle contended for, indeed, admits of a far more extended application. The whole of the country under British dominion is liable to the fate exemplified by a single station. It will scarcely be denied, that the healthiness of the Bengal provinces has been deteriorating for these last fifteen years. Cholera morbus is become inherent in the soil. Fevers rage with a virulence unknown in former times. If I mistake not, less severe complaints are also more frequent." Pp. 309–311.

Dr Ranken entitles a section of his paper On the origin, exhalation, and deposition of miasm. In this, canals, irrigation, and cultivation are pointed out as the principal sources of the evil. The next subject which Dr Ranken treats of, is the mitigation of heat; and we confess that our curiosity was highly excited by the title. We find, however, that in this respect the rich alone can benefit by the skill of the philosopher. For some time past our Indian correspondents have dwelt upon the comforts and even delight afforded by the *Thermantidote*, but we knew not what was meant by the term, and had written for a description of the machine or contrivance. We now find that it is a species of ventilator, the invention of a Mr Hough. It may be briefly compared to a winnowing machine, the revolving of which sucks in air from without, and makes it pass through or along wet screens into the chamber to be cooled.

The paper is concluded with Dr Ranken's idea of a healthy station in India, which may serve as an abstract of the whole.

" 1. The station is built on table land, which is covered and surrounded by a stratum of sand.

" 2. It occupies the centre of a circle whose radius is two miles, within which, trees, plants, herbs, and all vegetables whatever, having been eradicated, active measures are taken to prevent their reproduction.

" 3. No water, flowing or stagnant, is suffered to appear on the surface of the ground. To guard against the lodgment of any after rain, deep pits, or drain-wells, in which gutters converge, are dug to receive what falls within the limits. These wells, except at the entrances of the gutters, are covered over. Others supplying water for domestic purposes are constructed on the same principles. The masonry from the inside being continued a little above the ground, an opening remains large enough only to admit the ordinary vessels. Pumps, as in European towns, might answer better, where the depth does not exceed 20 feet. Some simple forms of machinery would greatly facilitate and abridge the labour of drawing water.

" 4. Wherever marshes, swamps, or streams are found beyond the circular pale, plantations of leafy trees, such as the mango, are raised in the vicinity to intercept their vapours. Wood is also cultivated in those situations for fuel and other useful purposes.

" 5. A portion of suitable land, likewise beyond the limits, is laid out in private and public gardens, which supply the station with fruits and esculents, and all articles of horticulture in demand.

" 6. The lines for the sepoys are in regular, wide, and intersecting streets, perfectly straight, and care is taken in the construction of every hut to insure its ventilation.

" 7. Barracks, hospitals, churches, all habitations of Europeans, are on a larger scale than usual, or what is equivalent, they are fully ventilated. Each building is double, like a tent, the space between the outer and inner roof being equal to the width of the common veranda. Fresh air at every inspiration, sufficiently cooled, is secured from without, whilst what is vitiated escapes through ventilators above, and appropriate apertures in the walls.

" 8. Horses and draught cattle are kept in stables and sheds, about 800 paces from the quarters of the men.

" 8. Ordure of every description, dead animals, offal, filth, and whatever else may putrefy or ferment, are collected daily from all places, and thence carted away to the gardens.

" 10. By all these measures, in co-operation, the sources of vegetable and animal contamination are cut off, leaving an unadulterated atmosphere to perflate the whole station, and ventilate each individual dwelling-house. The emanations from living bodies, which would otherwise become noxious, are thereby removed, and pure air at the same time is abundantly supplied for the respiration of the inhabitants." Pp. 348–350.

The medical topography of Arracan is the subject of two communications, one by Mr Burnard, p. 25–85 ; and the other by Mr Stevenson Junior, p. 86–127.

The general form of the country of Arracan is triangular. Its western side is washed by the Bay of Bengal, and on the east it is inclosed by three distinct ranges of hills. The highest in the first or Arracan range is 550 feet, and the second and third ranges are respectively estimated at 2000 and 4000 feet above the level of the sea. The hills are generally abrupt, and many of them insulated. They are covered with jungle, and have many channels cut in them by the violence of the periodical rains. Among them are situate several lakes and marshes, and communicating with them nullahs, whose banks, in general low and muddy, are on every increase of the tide overflowed to a considerable extent. The rocks consist principally of schistus. Granite has not been observed. These hills extend nearly north and south, and declining in the latter direction, gradually approach the coast.

The average breadth of the country inclosed between the hills and the sea, may be estimated at about forty-five miles. It consists chiefly of low marshy land, overrun with jungle, but presenting here and there a cultivated plain, skirted with wood, and more or less surrounded with water. The soil is in general argillaceous; but in the neighbourhood of the hills and by the sides of the rivers, lakes, and nullahs, a rich loam prevails, in which the mango and other trees attain great perfection. On the hills the jungle is principally underwood. The country is intersected by several rivers. The Arracan is the most considerable in the northern, and the Lemonkrong in the southern division of the province. The Arracan, by its numerous connecting branches with the Kaladyne on the north, and the Mongee on its south side, renders the centre of the province a complete mass of little islands.

The city of Arracan is situate 20° 35′ N. long. and 93° 32′ E. lat. in the apex of the triangle inclosed between the hills and the sea, from which it is distant about fifty miles. The river is navigable close up to the town, and then divides into several branches, which flow through the town in every direction. The average rise of the tide is above eight feet at the town; but spring tides rise higher, and cover a space of ground, which at other periods is free from the flux and reflux. "The banks of the stream generally through the town are low, and covered with sedge, coarse grass, and a few bushes, serving as a receptacle for filth of every description. The stream itself is made the receptacle of dead bodies, many of which, in the most offensive states of putridity, are constantly to be seen, at the different points where an obstruction is offered to their progress towards the main stream. Proceeding towards the sea, below the town, the banks rise very little above the level of the water, are covered with jungle, and intersected in every direction by smaller streams, forming a complete and impassable Sunderbund." P. 28. The grand difference between Arracan and the Delta of the Ganges consists, according to Mr Burnard, in the want of a *general* and abundant annual inundation, while a sufficient quantity of water either falls from the clouds, is furnished by high tides, or descends from the hills to keep up a perpetual renovation of the swamp, and to place the soil in that state of approximation to dryness, which seems essential to the production of marsh miasma. Nor is this altogether inconsistent with Mr Stevenson's statement, p. 90, that, during the rains and prevalence of the S. W. monsoon, all the rivers overflow their banks and lay a great proportion of the country under water. As to the seasons it may be said to rain in Arracan for half the year. In February and March there were occasional showers accompanied by thunder and lightning. In April and May the showers became more frequent, and by the first of June the rain was falling in torrents. During June it is believed that 70 inches fell, which is the average annual quantity in Bengal. In July 59.774 inches were ascertained to have fallen; and in August, September, and October, 43.601—19.834—3.735 respectively. In November there were a few showers; and about the 11th December a heavy fall of rain. The prevailing winds are the two monsoons as at Bengal, with a slight variation of direction from local situation. The S. W. monsoon of Bengal blows more frequently from the S., and the N. E. monsoon varies more to the W. of N. The changes of the monsoon are not so marked; the S. W. is, however, of longer duration, and may be said to continue from the beginning of April to the end of October. From whatever quarter the wind may blow, it must, before reaching Arracan, pass over a considerable extent of ground in every variety of condition. The consequence is, that every gale comes impregnated with the elements of disease. The situation of Arracan is injurious to the health of domestic animals. On entering it no quadrupeds were to be seen. Afterwards bullocks died in great numbers, and horses and elephants shared the same fate. The Burmese studiously avoided the town during the rains; and the Mughs often retire to the coast, or to some villages, when sick.

The thermometric variations were not great, but the barometric were. From tables furnished by Lieutenant-Colonel Lindsay, it appears that the average temperature in July 1825 varied from 79.3 at 8 A. M. to 84.4 at 2 P. M.; in August, 81.1 to 85.9; September, 80.8 to 85; October, 82. to 88.5; and November, 78.8 to 86.4. The sympiesometer during the few months it was observed, varied from 29.06 to 29.74.

The natives of Arracan, the Mughs, are a short but muscular race, possessing more activity and natural courage than the Bengalese. Their food is mostly fish and rice; but they do not refuse flesh, even putrid. Their houses are constructed chiefly of bamboos, and are covered with leaves; but the better sort are elevated and constructed on piles and rafters of wood, and *invariably* raised some feet from the ground. They are in general on the banks of some stream, but they are filthy in the extreme. The population seemed to be very scanty. Few of them reach a great age. The prevailing diseases among them are scrofula, dysentery, and fever, cutaneous affections, and cholera.

Such a country could not fail to be destructive to Europeans, and to the natives of the upper provinces of India, especially, until the superior officers had learnt by sad experience the precautions necessary to lessen the evil. Sickness has prevailed amongst the native troops (as is universally the case in men recently arrived from the upper provinces) from the time of their entering Bengal. The march, too, was of a desultory character, and sick men were left behind at every station where a halt of any length occurred. The Arracan army left Chittagong in January 1825. In its progress a few cases of dysentery and fever appeared among the Europeans, owing to the great vicissitudes of temperature to which they were often exposed. On the 1st of April the great object of the campaign was attained, and from that time the sick became more numerous.

"With the fall of the capital of Arracan, military ardour, the great source of the preservation of the health of armies, began to subside. The enemy had evacuated the province, and all prospect of advancing was at an end. The construction of lines, and the employment of working parties, of which the soldier is seldom fond, now commenced, and nothing presented itself but the dreary prospect of spending the rainy season at a distance from family and friends, and in a country affording few of the necessaries, and none of the comforts of life. Under these depressing circumstances, the army gradually became a prey to the insidious influence of an unwholesome climate. It was not, however, until the rains commenced that sickness became general, and disease assumed that fatal and untractable form which characterized it during that period." Pp. 105, 106.

The general characters of the fever did not vary much from those of the common endemic of tropical countries, but had a greater resemblance to its form in the Ramghur and Singhbhoom districts than in Bengal.

"The attack of the fever," says Mr Burnard, "was sometimes sudden; but in general, loss of appetite, lassitude, slight headach, and nausea, preceded the developement of the febrile symptoms; a sense of coldness was generally felt, but did not, except in a few cases, amount to distinct rigor; and when shivering did take place, it might be looked on as the commencement of a disease which more speedily and decidedly assumed the intermittent type. To the symptoms above-mentioned, in a few hours generally succeeded heat of skin, headach, with a sensation of tightness and weight over the eyes, flushed countenance, full and quick pulse, white and dry tongue, anxiety, restlessness, great thirst and disposition to vomit; in some instances the irritability of the stomach so great as to reject every thing. The bowels sometimes costive; but more commonly small, scanty, and vitiated stools were passed, with some griping and heat, every five or six hours; no feeling of relief was produced by these evacuations, the patient complaining that they were unsatisfactory, and of a sensation of a load still remaining. What was rejected by vomiting usually consisted of mucus, and the fluids drank; very little bile, in the greater number of cases, passed into the stomach. Whether produced by deficient secretion, or by a spasmodic constriction of the ducts, bile was in many instances absorbed, and conveyed into the circulation, tinging every part of a bright yellow, giving to the fever the distinctive character of the endemic of the West Indies; few cases in which this was decidedly marked terminated in recovery." Pp. 33-35.

When the event was fatal, it was usually by the lesion of some important organ, and it was from the organic affection that the prognosis was to be formed. It sometimes terminated fatally by serous effusion in the head, but more frequently by dysentery and diarrhœa. The lungs were rarely affected in those under Mr B's. own care, but his Majesty's 44th regiment suffered much from pulmonic inflammation. A singular species of itch degenerating into sloughing sores and burrowing ulcers seemed to be connected with the febrile state. Convalescence was slow and interrupted.

Mr Burnard thinks that the local circumstances of the troops were sufficient to account for the production of the disease.

" Popular clamour assigned a great weight in the production and extension of disease in Arracan, to an inadequate and unwholesome supply of provisions; but where every rank and class of men suffered equally, where officers, who were certainly supplied with every necessary, and generally with the luxuries of life, fell victims in a proportion fully equal to that of the men, (at least with a trifling allowance for difference of exposure,) it must require a great prejudice in favour of a particular theory to assign this as the origin of the sickness. Where an extensive effect is produced, we are naturally led to search for a cause of similar extent; and this cause was obvious to every one whose previous bias did not prevent his observation of the localities of Arracan. That damaged and inferior provisions were unavoidably at times issued to the troops is undeniable, and that the use of these articles is unfavourable to recovery or convalescence, every one will readily admit; but to assign this as the whole and sole cause of the widely spread sickness and mortality, could originate only from a predetermination to support a particular theory, and to see nothing which militated against it. Whatever may be the essence of marsh poison, it is certainly intimately connected with the principle of vegetation; and in every country where malaria exists, nothing is found so effectual in checking its ravages as cultivation. During the presence of a hostile force in any country, it is natural to expect that the labours of the husbandman will be suspended; and this circumstance was an additional source of disease, in a place at all times but too productive of it." Pp. 47, 48.

In the treatment of the disease much depended upon the period at which it was instituted. If the patient was seen under the first symptoms of attack, Mr B. frequently bled *ad deliquium*, or the relief of symptoms. After which he had recourse to free purging by calomel alone or combined.

Dr Waddell describes the disease which prevailed among the British troops at Rangoon, pp. 240—280. In Rangoon, many of the causes to which endemic diseases are commonly ascribed are combined to a remarkable extent. Rangoon stands on the north bank of a river of the same name, extending along it upwards of a mile, and being 600 or 700 yards in breadth It is encompassed with oak-wood timbers and planks ten or twelve feet high. The river opposite to the town is 880 yards wide; its channel is deep, and its sides and bottom covered with soft mud. During the rainy season, the current runs down at the rate of six or seven miles an hour, and the tides are felt only to a short distance above the town. In the dry months the current is much less rapid, and the tides extend their influence higher up. The water of the river is more or less turbid, according to the season, but except in the hot months, when it becomes brackish, it is sufficiently wholesome. The better sort of houses are substantially built of wood, supported by colonnades of teak pillars. The houses of the lower classes are raised on bamboos about two feet from the ground. At the west end many of the houses rise on piles from the steep and muddy banks of the stream, but "on the eastern extremity, and along the whole southern front of the stockade, are numerous houses, most of them supported on piles within high water mark, and communicating with each other by elevated wooden platforms, or by means of planks and boles of trees laid end to end upon the slimy beach. Towards the conclusion of the year 1824, when the inhabitants, who had fled into the interior of the country on the capture of the place, returned to their homes, this part of the town became densely peopled; and what from the peculiar odour of the exhalations from the mud of the river—the effluvia of animal and vegetable substances in process of decomposition, particularly putrid fish, which the Burmese are accustomed to use largely in the preparation of their favourite dish Balachong—their practice of depositing the refuse of their domestic economy near their doors, and of relieving nature close to, or under their houses—the air here during the ebb tide was hardly respirable by lungs unused to breathe so impure an atmosphere." P. 243.

Although Ava has been justly celebrated for the salubrity of its climate, yet owing to the arrival of the army at an unfavourable season, the troops suffered as much from sickness as they did at Walcheren or at Carthagena. The year, as at Bengal, may be divided into the cold, the hot, and the rainy seasons. The cold season commences with November, and terminates towards the end of February. The hot season succeeds, and about the end of the first week of June the regular rains may be said to set in. They finally cease before the middle of October. In 1824 the quantity of rain that fell was astonishingly great, compared with that which commonly falls in Hindoostan.

"In the rainy months, the mutations of temperature are frequent and sudden. Between the showers the air is hot, close, and moist; an atmosphere of steam seems to float around, and we breathe as if immersed in a vapour bath; all at once the sky is overcast, the rain descends heavily, accompanied with a cold, rushing wind, and the thermometer sinks 10 or 12 degrees. A damp unpleasant chill is the consequence, and people are compelled to lay aside their light cotton for their warmer woollen clothes. Again the rain ceases, the sun breaks forth, the muggy weather returns, and the cottons are resumed. In such a country, and at such a season, it is obvious that troops engaged in active military operations could not long withstand the encroachments of disease; and so, indeed, it happened. From June to October, inclusive, the principal diseases which affected the European part of the force were dysentery and remittent fever. Dysentery, remittent and intermittent fevers, prevailed extensively amongst the sepoys and native followers, and many cases of cholera occurred amongst both. Hospital gangrene and scurvy broke out in August and September, and shall be noticed at some length under their respective heads. The pyrexial epidemic which visited Calcutta in May, and spread over a great portion of India during the two succeeding months, also prevailed at Rangoon in June and July. Pp. 247, 248.

"In the month of August, there was an alarming mortality amongst the men of the Madras European regiment, from a disease which, in its progress and termination, was said to have borne a strong similitude to the Beriberi of Ceylon; of this, however, I do not speak from personal knowledge, but have reason to believe that such was the fact." Pp. 248, 249.

Dr Waddell then proceeds to give an account of the principal diseases, their symptoms, causes, and treatment, as they occurred in the European and native hospital of the detachment of artillery under his charge. Rangoon was taken by storm on 11th May 1824, and till July 1825 more than half the number of admissions was for dysentery. Dr Waddell is of opinion that the disease has its local origin frequently in the small intestines, and founds his opinion chiefly on the exquisite pain and tenderness in the central and hypogastric regions of the abdomen. This he considers as a form of the disease distinct from Colonitis. For the symptoms of each, and the causes exciting the disease generally, we must refer to the essay itself. Success in the treatment of the enteritic form depended upon the early application of the remedies, and hence was nearly inversely as the mildness of the early symptoms. The most acute cases were the most tractable. In these the practice was to take twenty or twenty-five ounces of blood from the arm, and to exhibit twenty grains of calomel. Four hours afterwards a purgative was administered; the abdomen was fomented; a large blister subsequently laid over it, and the ample doses of calomel continued every four hours to the third or fourth time. After the lapse of twelve or sixteen hours, it was usually found that the pulse had fallen to its natural standard, and that the tormina and tenesmus were considerably abated. In this case the dose of calomel was reduced to five grains, and given in combination with three or four grains of antimonial powder and half a grain of opium, until the mouth became sore. When this effect was speedily induced, the safety of the patient was insured, although at the expence of painful swelling of the mouth and fauces, and severe ptyalism. In Colonitis, on the contrary, according to the experience of Dr Waddell, mercury was of no avail either in the acute or chronic form, in the first or last stage of the disease. The greatest benefit was derived from leeches applied to the perinæum in the first or inflammatory stage.

Hospital gangrene affected the natives alone.

Scurvy appeared among the European troops towards the end of September, and somewhat later among the natives. The scorbutic diathesis also modified and aggravated the other diseases. The cause of this affection among the Europeans was the deficiency and bad quality of the diet, both animal and vegetable. Among the natives it could be ascribed only to its deficiency. Medicines seemed to have little effect until there was an amelioration of diet. No benefit was observed even in the hydropic cases from the use of nitrous vinegar, or the solution of nitre in lime juice.

Remittent or intermittent fevers and cholera, which were the other diseases of this station, Dr Waddell proposes to consider on another occasion.

The sickness which prevailed to an unprecedented degree in Goruckpore during February and March was fever of the intermittent type, with a few remittent and continued cases. It is ascribed by Dr Butter to the great heat in combination with marsh miasmata. P. 207–212.

The disease to which Mr Tytler has given the name of *diarrhœa hectica*, is, according to him, the cause of three-fourths of the deaths among the lower orders of natives of Hindoostan, and yet the subject, he thinks, is new. His description of it will scarcely bear abridgement. It seems to be an idiopathic disease, closely allied to the *diarrhœa biliosa* of Cullen. The stools consist of a semi-liquid matter of two seemingly heterogeneous ingredients, one a pulpy mass approaching to a gray colour, the other of a bright yellow, intermixed with the former in streaks. To these are added occasionally, but not always, small quantities of blood. The stools, amounting to six or eight in the course of the twenty-four hours, are very copious, and have a peculiar odour, which is quite different from that of ordinary feces, and attract swarms of flies to harass the dying hours of the miserable wretch, who expires in a flood of alvine discharge. The pathological changes observed after death are thus detailed:—

> "Sometimes a partial redness, scarcely amounting to inflammation, is to be found in different parts of the small intestines. In some, the mesenteric glands are much enlarged, and apparently diseased; and this, upon the whole, is, I think, the most constant morbid appearance. In others the spleen is greatly increased in bulk, occasionally to a bulk much exceeding that of the liver, and of a very dense and compact structure. In one much emaciated female, a number of cretaceous substances, about the size of two peas each, were dispersed throughout its mass, and lodged in small cells, whilst the mesenteric glands were much enlarged. In an old man, the whole of the colon was completely stuffed with a white substance of a steatomatous appearance; the rectum was empty, and much inflamed. This patient was said to have been much addicted to the use of opium. But all these appearances are to be regarded as accidental accompaniments, and throw but little light on the real nature of the complaint." Pp. 8, 9.

With regard to the treatment, Mr Tytler says, that it is upon opium alone that we can place any confidence. Forty or fifty drops of laudanum may be given twice a-day, or one or two grains of solid opium, morning and evening, and even this allowance may be increased if required. "It is wonderful how much more opium a Hindostanee constitution can bear than a European." In the incipient stage it may be cured; but from a certain degree of emaciation, debility, and diarrhœa, no person recovers. P. 1–17.

Malignant ulcers, varying, however, in form, seem to have lately become epidemic in various parts of India. In Arracan the gangrene was exceedingly moist, the affected parts dissolving into putrid sanies, while at Prince of Wales' Island the gangrene was absolutely dry. In Bengal the form was intermediate between these extremes.

The hospital gangrene as it appeared in Arracan is described by Mr Waddell. The Europeans escaped it entirely. The disease uniformly began on the lower extremities, most frequently upon a maleolus. From thence it spread with more or less rapidity up to the calf of the leg, which it sometimes destroyed almost entirely, with a profuse discharge of putrid bloody sanies. But more commonly a ring of healthy inflammation formed a boundary between the dead and living parts.

Stimulating applications were employed, but were productive of little or only temporary benefit. M. Dussassoy's treatment, by laying on a thick covering of cinchona bark, and then moistening it with oil of turpentine, gave so much pain by its caking into a paste, that it could not be continued. When the disease was complicated with scorbutic symptoms, lime-juice, and nitric vinegar to the extent of four, six, or eight ounces a-day, made no impression on either disease. *Nitras argenti* or *sulphas cupri*, with mild dressing, soon brought the sores to the condition of a simple and easily curable ulcer; while opiates to relieve the pain, and bark and wine when the excitement was moderate, were the only internal remedies of use. Dr Waddell is inclined to recommend amputation in the bad cases, as giving a chance of recovery, and even rendering its fatal termination less agonizing.

The hospital gangrene which occurred as an epidemic in a portion of the Nurbudda field force in November 1818, is well described by Dr Adam. At first a few sporadic cases occurred, but they gradually became more numerous, until not a sore was met with that did not exhibit the gangrenous character. It affected indiscriminately all the classes of natives under Dr Adam's care, while only one European showed symptoms of the prevailing malady. It is also remarkable that some corps of the native troops escaped it entirely. In no instance did it prove fatal, but the sphacelation often extended very deep, exposing the bones. Very little humour of any kind was secreted; and it appeared as if a sudden death had seized the parts without the intervention of the process of suppuration, or the serous effusion observed in ordinary cases of gangrene. The only other disease at this time was intermittent fever, which yielded readily to bark. But upon the gangrene bark made no impression. Opium was freely administered with no better effect. Wine, like opium, aggravated the excitement, and did not conduce to sleep. Nitric acid and the arsenical solution internally were likewise unavailing. Externally, bark appeared to be useful in rendering the ulcers cleaner, but the arsenical solution promised more than all the other external applications. In one case it was attended with the happiest effects. It was used diluted with one-half water; and after a day or two the sloughs were thrown off, and the sores rapidly improved. Change of situation did not succeed in putting a stop to the progress of this disease. At last Dr Adam ventured on the use of mercury. He commenced by giving calomel in the dose of ten grains, with half a grain of opium three times a-day, and continued it till the mouth became sensibly affected, which generally happened between the third and fourth day. He was gratified to find, that when this took place all the symptoms abated.

From a short report from Mr Langstaff, p. 419, it appears that sloughing ulcers were also frequent in the Benares division of the army.

Another paper, on gangrenous ulcers, is from Mr Leslie, in charge of the 65th N. I. at Prince of Wales' Island. The situation of Fort Cornwallis, in which they were stationed, is very swampy, and its accommodation bad. Mr Leslie has described three forms of the disease. In the first the sores ulcerated, extended, and threw off sloughs, promising amendment; but after weeks of suffering the patient died exhausted, sometimes without much change in the sore. In the next form a sore would occasion great pain; and on examination a small black spot would be observed in the centre. The slough in a short period covered the whole sore, and rapidly extended from the foot or ankle to nearly the knee without discharge, the whole limb in many cases resembling a piece of charred wood. At a subsequent period a third species of sore appeared, affecting the cicatrices of ulcers, which had either entirely or very nearly healed. Ulceration would commence, resisting every application. Of the local applications, none on the whole appeared superior to the common lotion of nitric acid diluted, but this was some stronger than what is usually directed. A drachm and a half of the strong acid was mixed with twenty-four ounces of water. The nitric acid was at last tried undiluted. Its first effects were most acute pain, continuing from a quarter to half an hour, and the formation of a slough. In some cases much relief followed; in others it altogether failed. Mercury was not so beneficial as in the form of the disease seen by Dr Adam. Blood-letting was had recourse to in some cases with advantage; and one or two amputations were performed with success. Mr Leslie adds two series of cases, unsuccessful and successful, and subjoins some tabular views connected with the subject.

An elaborate essay on diseases of the spleen, particularly the vascular engorgement of that organ common in Bengal, is contributed by Mr Twining, which is followed up by an account of the native treatment of diseased spleen by Mr H. H. Wilson. Mr Twining is of opinion, that inflammation of the peritoneal coat, or of the substance of the spleen, is comparatively a rare disease in Bengal, since the evidences of it are not found on dissection.

"Among the morbid appearances which are most frequent, we observe, 1st, A soft enlargement, resembling a great clot of blood, wrapped in a thin membrane; this varies in colour from black to brown or blue; and when we attempt to lift the spleen, the fingers are thrust through the membrane, and the organ breaks down in the hands, becoming a putrid gore. 2d, Next in frequency, we find opacities of the peritoneal surface from lymphatic deposit, thrown out during superficial inflammation; or possibly only the effect of repeated over-distension. 3d, Adhesions of the peritoneal coat of the spleen to contiguous viscera, which adhesions are by no means a general result of tumid spleen in Bengal. 4th, In a few old cases, we find a more indurated friable spleen, that breaks when handled without much force, like a piece of old moist cheese. 5th, And still more rare, is the cartilaginous lumpy hardness to which we give the name of scirrhus." Pp. 362, 363.

The other appearances more rarely observed are in persons long subject to agues,—an uniform pale white or milky colour of the peritoneal coat, which is more than usually tough and wrinkled, while the substance of the spleen is soft and flexible; and in those who are carried off by purging, after having long suffered from diseased spleen, numerous small ulcers are found on the internal membrane of the great intestines, while the peritoneal coat appears either quite healthy, or paler than usual.

We have premised the pathological changes to the symptomatology and etiology of the disease, because they serve as the foundation of all reasoning upon the subject, and discriminate the essential from the accidental phenomena.

Enlarged spleen is a frequent consequence of protracted intermittent and remittent fever, wherever these diseases occur. Great heat is not essential to the production of enlarged spleen. It occurs most frequently when the cold nights set in, after the termination of the rains, or just at the period when concentrated exhalation and considerable diurnal changes of temperature coexist.

"Vascular engorgement of the spleen is characterized by a pale, and often lurid or cadaverous countenance; the *tunica albuginea* of the eye has a pale blue or pearly appearance, similar to that observed in hectic patients; the skin is generally dry, and there is some morbid heat of surface, especially over the belly. There is tumour and tenderness in the region of the spleen, with tension at the epigastrium, which often extends across to both hypochondria. The patient suffers from thirst, though his tongue is generally clean and moist; sometimes it is of a pale and glossy hue, having its surface marked with deep fissures; more rarely it is of a morbid red colour. The stools are generally scanty and frequent, with tendency to constipation; urine pale and copious; the pulse is quick and occasionally hard; appetite indifferent, and digestion imperfect. The debility is greater than would be at first apprehended from observing the size and appearance of the patient.

"Agues frequently return while these symptoms remain, and the hot stage is protracted, and generally peculiarly distressing." P. 355.

"This febrile or irritative stage occurs less frequently than the simple congestion, in which the tumefaction of the spleen is not only greater, but more distinct, because there is less general elastic tension of the belly. There is less tenderness on pressing the spleen. With this condition of the local disease, we find that the pulse is low and weak, face of a pale and lurid colour, tongue clean and moist, skin cool, with a peculiar dry feel, like a thin satin loosely laid over the soft cellular structure; there is an hectic eye, and pale urine, as in the irritative stage, but less of pyrexia. There is generally more appetite, but assimilation is imperfectly performed, and nutritious food does not restore the strength. Agues relapse more rarely than in the irritative condition, except at the lunar phases, or when the bowels become obstructed, and the cold stage is most distressing from great distension of the spleen." P. 356.

"Either the irritative or the congestive stages of disease before described are occasionally followed by the *indolent tumid spleen*, which is attended with little or no pain on pressing over that organ; while the spleen, though not exceedingly large, is often very hard, and its extent well defined. There is less appearance of debility, more appetite for food, and digestion is more perfectly performed than in the two foregoing forms of disease. In this indolent stage, there is often a dry cough, attended with pain in the left side of the chest, occasionally shooting to the centre of the scapula, or to the shoulder." P. 358.

In females, amenorrhœa is an early attendant in most cases of tumid spleen. Mr Twining lays great stress upon the influence of tumid spleen upon the function of respiration. He ascribes the black stools not to disordered bile, but to the secretion of carbon from the intestines, to compensate for insufficient decarbonization of the blood by the lungs and skin; and suggests, as the subject of inquiry, how far the muscular debility and despondency may depend on the quantity of black or carbonized blood that is collected in the spleen, and thus detained in contact with the great solar plexus of nerves. But we think he goes too far when he attributes the taking away of the breath on descending into the cold bath, and the pains of side induced by violent exertion, to extension of the spleen.

The treatment generally found useful is a steady perseverance in a course of purgative medicines, combined with bitters and some preparation of iron, with a mild and rather abstemious diet. This will commonly succeed in the congestive form. The irritative state requires the application of leeches to the side, or sometimes venesection; and when the febrile symptoms are more than usually urgent, the cure proceeds more favourably when the patients were purged two or three days before the bitters and chalybeates were begun.

Mr Twining is greatly adverse to the administration of mercury in cases of enlarged spleen; and even considers it very requisite to place some restriction on the habitual exhibition of calomel as a domestic remedy in every indisposition of children, and more especially in the sequelæ of protracted fever. The most obstinate and intractable cases of tumid spleen occurred in patients who had previously used mercury; and he strongly combats the opinion of those who consider that enlarged spleen should be treated in the same way as enlarged liver.

A peculiar state of the constitution accompanies the vascular enlargement of the spleen, which renders it unequal to bear the action of mercury without great hazard of inducing alarming debility and depression of vital power, with tendency to sloughing of the lips, cheeks, and gums, which, when once commenced, generally terminates fatally. He is disposed, however, to think, that after subsidence of an enlarged spleen, when the symptoms of debility have ceased, and the functions of the skin have been restored, mercury may be used without danger.

Mr Twining says he has given iodine a fair trial in six chronic cases of tumid spleen, and is satisfied that it is of no service in that disease.

The native treatment of a disease so common is worthy of consideration. Their general plan is to apply the actual cautery over the diseased spleen. The patient is ordered a low diet, with injunctions to take but little drink, and to eat no butter, milk, oil, or fat. A mixture of aloes, garlic, and vinegar is given daily, and about a grain of sulphate of iron with each dose. The quantity of aloes is regulated so as to produce three stools in twenty-four hours.

Some cases of phthisis pulmonalis are related by Mr Bird, as illustrating the modification of that disease by the effect of climate. He also thinks that they tend to confirm the opinion of Dr W. Philip respecting the causes and origin of one species of consumption; but we must confess we do not see any evidence of it. On the contrary, in these cases the pulmonic disease preceded the gastric and hepatic affections, and is only complicated with them. Phthisis pulmonalis is comparatively a rare disease in India, and arises only when there is a strong predisposition. The cases related are but three in number, and the chief peculiarity appears to us their fatal termination at an early stage, and before many of the tubercles had suppurated or softened. Mr Bird is of opinion that the tuberculous diseases of the lungs and of the liver have a common scrofulous origin; and apparently without being acquainted with Dr Alison's opinion as to the inflammatory origin of tubercles, he strongly confirms it. "Sometimes it (the liver) is tuberculated, but at others there is only an approach to that state. In the latter instance, dissection discovers a succession of bright red circles on the liver, surrounding a pale yellow centre. From these inflammatory rings the small tubercle of that viscus seems to originate."

There are several papers on tumours. Mr Hutchinson removed successfully a large vascular sarcoma from the face of a native. Mr Macpherson, Mr Clarke, Mr Twining, and Mr Egerton, all removed successfully tumours in, or connected with, the eye.

A case of *lepra mercurialis* is detailed by Dr Johnstone; a case of small-pox after vaccination by Mr Spilsbury; and Mr Henderson gives an account of the treatment of Indian rheumatism, and refers for further observations to the Edinburgh Medical and Chirurgical Transactions.

On the subject of spasmodic cholera there are only short notices in the appendix. Mr Dempster states the means which he employed to furnish medicinal assistance to the lower classes in Buxar, where it appeared in April 1826. He employed venesection in all those cases where the blood flowed readily, and on standing a short time, exhibited the natural appearance of separation into serum and crassamentum. The good effects were most striking; the pulse became full; the vomiting and purging ceased; and the patient almost immediately recovered. But in those cases where the blood trickled slowly from the arm, and on falling into the cup instantly formed into a stiff coagulum without serum, depletion seemed only to accelerate the fatal termination.

There are in this volume also various contributions to the Materia Medica. Mr Forsyth gives some account of the grass oil of Nemaur, chiefly in regard to its commercial value. It is obtained by the usual process of distillation from the cut grass. "It is volatile and extremely pungent, of a very light straw colour, and beautifully transparent, giving out a peculiarly rich and grateful odour, which diffuses itself very widely if the vessel containing it is left unstopped." It is held in high estimation for the cure of rheumatism, even of the most obstinate chronic character. The method of using it is by rubbing about a couple of drachms of the undiluted oil over the pained part in the heat of the sun or before a fire twice a-day. It causes a strong sense of heat and pricking, which it is said usually lasts for two hours. It is said to be uniformly adulterated in passing through the hands of dealers, by an admixture of grosser and less valuable oils, generally Mr Forsyth believes of *Ol. se-*

sami. That it is adulterated is very probable, but we should doubt the *Ol. sesami* being employed for that purpose, as it is a very thick fixed oil, which in small quantity would betray itself.

Lieutenant-Colonel Hazlewood, when travelling in South Africa, learned that the Moravians had a specific for cholera. He procured a supply of it, and sent it for trial to Madras and Bengal. At Madras it was tried in one case by Mr Sievwright, and the result was favourable. The case was, however, a very mild example, and the patient had been only three hours ill on admission. At Bengal it was tried in four cases by Mr Twining, who remarked that the tincture had in many respects the sensible properties of the tincture of buchoo. The directions sent to him were " to take a table-spoonful with as much water: if the vomiting did not cease in five minutes, give a desert-spoonful diluted as before. A tea-spoonful diluted with twice its quantity of water repeated every five minutes until thirst abates. The undiluted tincture to be used as an embrocation to the chest, and to parts affected with spasms. In the very worst cases a recovery may be expected in three hours from the time the mixture is first given. The purging will rather increase for the first quarter of an hour, and then cease altogether. The embrocation to be continued until the heat of the body begins to return." The result of Mr Twining's trial was, that he had no wish to try this remedy again, unless in compliance with especial orders. Three of the cases terminating fatally proved that it had not the effects ascribed to it, and the fourth case, whose symptoms were those of ordinary cholera, was not ameliorated by it.

Dr Johnstone is of opinion that the progress of the *Erythema mercuriale*, in a case related by him, was checked by the use of the Deodar oil, extracted by heat (distillation ?) from the wood of the Devadara or Deodar tree, (*Pinus dévadára.*) It was given internally. One drachm appeared to be as large a dose as the stomach of the patient would bear. It always acted as a diaphoretic, and produced no other evident effects. In cases of inveterate itch, Dr Johnstone has given it to the extent of half an ounce with great success, and without in any way deranging the *primæ viæ.* It is extremely variable in its effects in different people; in some a single drachm being sufficient to cause vomiting, while others take half an ounce with only slight nausea.

It is with great satisfaction that we find that the native practitioners contribute to the value of these Transactions. Ram Comol Shen has given some account of a native drug called *Gu-*

luncha. It is very common in Bengal, and is the *Menispermum cordifolium*, Wild. It is used in the form of decoction, and of the fœculum, deposited from an infusion of the stalk, which is described as forming, when dry, a granular or pulverulent mass, resembling sugar in appearance. It is, like the other species of *Menispermum*, a pure and intense bitter.

Mr Piddington presented to the society the crystallized sulphate of the bitter principle of the Neem tree, *(Melia azedirachta,)* in the hopes that it might be found to be a substitute for the sulphate of quina. The secretary adds, that this preparation was of a whitish colour, with very slight lustre, and in the form of grains or minute crystals. It tasted slightly bitter; and no trials had been made of its efficacy.

Mr D. Scott has also attempted to find a substitute of quinine in the bark of the *Chutwun*, which is considered febrifuge by the natives. It affords a copious precipitate with infusion of nut-galls; is not affected by tartar emetic, gelatine, or sulphate of iron. Its bitter principle, which is very abundant, is abstracted by the infusion of nut-galls. By following the usual process, which, however, was very imperfectly performed, crystals were obtained, which proved to be sulphate of lime.

A root in use among the nations of Assam is described by Mr MacIsaac. They employ the decoction with the addition of a little arrack, and consider it infallible in every case of sickness. It tastes very like quassia, and gives the saliva a high tinge of yellow.

Mr Vaussell has given some account of the manner in which the Papeeta seed (*Ignatia amara*) is used at Cambay. It is administered with success in the simple cholera. The seed is rubbed with a little cold water on a smooth stone slab, until from five to twelve grains are taken up. The dose is repeated every two or three hours, according to the urgency of the case. Along with the papeeta, a bit of the dried nut of the *Cocos Maldavica* is generally rubbed, which is said to render its effects more certain.

There is a communication concerning the Himalayan rhubarb from Mr Royle. When this species was first described by Mr Don, (Edinburgh New Philosophical Journal, by Professor Jameson, March 1827, p. 304,) it was asserted, without any expression of doubt, that it furnished the Russian rhubarb. Mr Royle, on the contrary, assumes it as certain, that the Russian rhubarb is furnished by the *R. palmatum;* but both botanists, we regret to say, have impaired the value of the information derived from their own observation, and that of competent observers, by blending with it the statements generally made in good compilations. Leaving it, therefore, as still undecided what species of Rheum furnishes the commercial rhubarb, we now extract from Mr Royle's paper what he says concerning the Himalayan rhubarb from his own authority.

"By my plant collectors rhubarb has been found in large quantities on the Choor mountain, in lat. 30°, and at an elevation of about 9000 feet. There it has likewise been seen by Mr Gerard growing in rank luxuriance, also in vast beds on the hither slope of the Himalaya; and beyond them he has found the plant far more majestic, and the leaves larger and more spreading. The table land of Tartary, he informs me, is covered with rhubarb, at the height of 16,000 feet; and there is abundance of it at Ludak, in lat. 37°, from whence some of very fine quality was sent to Captain Kennedy by Mr Moorcroft; indeed it appears, that wherever travellers have been, there the rhubarb has been seen; and we may infer that it is to be found at the same latitude and elevation in all the intervening spaces." P. 440.

Thus in several places on the Himalayan frontiers of Hindoostan rhubarb has been found; but the botanic characters of the species are too vaguely given. Major Hearsay thought he had seen three distinct species of rhubarb, one called *Rantra*, broad leaved, and of which the branches had an acid taste, and possessed purgative properties; and whose root, both in sensible qualities and medical virtues seemed equal to the best rhubarb Mr Royle had ever seen; the second had narrow spear-shaped leaves; and the third deeply indented serrated ones, which Mr Royle suggests may have been the *Rheum palmatum*. There is subjoined a report of medicinal trials of the Himalayan rhubarb, cultivated in the H. C.'s hill botanic garden, but the root was imperfectly dried and prepared. Mr Royle estimated its purgative power compared with that of commercial rhubarb, as 20 to 30. Mr Twining says the powder was of a brownish colour, had a slight aromatic astringent taste, and in smell very little resembled the ordinary rhubarb. It did not appear an eligible remedy in obstinate costiveness, on account of its aromatic astringency. It is less disagreeable to take than the best Turkey rhubarb, nearly equally efficacious as a purge, and very superior in small doses as a tonic and astringent in profluvia. It is not apt to gripe, and it tinges the urine of those who take it of a very deep colour. Of forty-three persons who took it, only one complained of nausea.

The mineral spring of Sonah, about thirty-five miles from Dehli, described by Mr Ludlow, has a temperature of 108°. Its characteristic constituent is sulphuretted hydrogen in great abundance; and it contains little saline matter and no iron. Its obvious effect, when taken internally, is to increase the flow of urine, without purging. Dr Waddell has also noticed in his paper on the diseases of Rangoon a mineral spring, of which the water is colourless and without smell; taste powerfully acid and subastringent. Cloths dipped into it are corroded and destroyed. It was used as a detergent lotion for foul ulcers. Mr Wilson examined four mineral springs near Hazareebagh. Of the one the temperature is that of the atmosphere, and of the others 108°, 170°, and 190° respectively. From the last there arises much vapour, which has the smell of sulphuretted hydrogen, and upon evaporation the water yields a copious residuum, the chief ingredients of which are muriate and sulphate of soda, with a very slight indication of muriate of iron. Mr Spilsbury gives a notice of two hot springs in the valley of the Norbudda. The heat is very great, and they are used only externally.

ART. V.—*Hints to young Medical Officers of the Army on the examination of Recruits, and respecting the feigned disabilities of Soldiers, with official documents; and the regulations for the inspection of Conscripts for the French and Prussian Armies.* By HENRY MARSHALL, Surgeon to the Forces. London, 1828.

THIS little volume, unassuming as its title and appearance are, relates to a subject of great public importance. "The selection of persons who are possessed of intellectual and physical capacity for the practice of war, and the systematic instruction of persons so selected in approved forms of discipline, may be regarded as an object of high national concern;—it conduces to the preservation of national independence, and on this ground it demands the deepest attention of patriotic statesmen, and the closest study of scientific soldiers."

This sentiment of the venerable Dr Jackson, whose death we had lately occasion to record in this Journal, will, we are assured, be found in unison with the views of all those who, like Mr Marshall, have been led by duty and by inclination to give their attention to the examination of recruits for the army. This forms a primary and important part of the duty of every military surgeon,—a duty to which a regard for his own credit, for the character of his corps, and for the interests of the public service, imperiously demands his attention.

Those who have been accustomed to trace the progress of our victorious fleets and armies, and to dwell with admiration on the traits of national enterprize and of individual heroism displayed by British seamen and soldiers in every quarter of the globe, will, we apprehend, be but little prepared to meet with the pictures of moral degradation and depravity which occasionally fall under the observation of the military and naval practitioner, and of which so many vivid representations have lately been laid before us in the writings of Hennen, of Hutchison, and of Cheyne, as well as in the present and in the preceding writings of the experienced author before us.

It would appear that, from the time of Vegetius downwards, the aptitude of particular nations and of particular classes of the community for the purposes of war, has been an object of study and of observation amongst military and medico-military writers. In his celebrated work, *de re Militari*, the author just mentioned remarks, that " all nations which are near the sun" (meaning of course the inhabitants of tropical countries) " are dried by too much heat; that they are indeed abundantly wise but unsteady in action; having too little blood they are fearful of wounds;"—" that northern nations, on the other hand, abounding in blood *(largo sanguine redundantes)* are more determined in battle, but are rash and inconsiderate."

However fanciful some of the views of Vegetius on this subject may appear to be, we believe that the general preference which he gives to the agricultural over the manufacturing part of the community, for the purposes of warfare, is quite consonant to modern experience, as will be obvious to those who have perused with attention Sir James M'Grigor's account of the health of the Peninsular army, and the various writings of Dr Jackson. The last-mentioned author, in his view of the formation, discipline, and economy of armies, has given us the characteristic traits in the military character of the principal nations of modern Europe, and of the three great subdivisions of which the British army is composed, the English, the Irish, and the Scotch.

The object of the work before us is to give, without reference to national or local peculiarities, a comprehensive view of those real defects which ought to bar the admission of individuals into the military service of the country; and of those feigned defects by which an exemption from such service is not unfrequently sought, and in too many instances obtained.

Mr Marshall's book is introduced by a series of official documents from the Horse Guards, and from the Medical Board Office, relative to the recruiting department of the army; and from a perusal of these it will, we think, be readily perceived how difficult the authorities have found it, in their instructions to the district and regimental surgeons, to steer a middle course, so as to obviate the admission of inefficient recruits on the one hand, and the fastidious rejection of serviceable men on the other; perhaps the particulars as to age and size are those alone which admit of precise or definite rules; and all beyond this, we are convinced, had better be left to the discretion of the medical officer, could we only insure such an attention to the subject as Mr Marshall's work evinces.

Our author next adverts to the conscript laws of France, of which an abridgement was given many years ago in the sixth volume of this Journal. The rigour with which those laws were enforced may be judged of by the following extract:—

"Conscripts convicted in feigning disabilities were sentenced to hard labour for five years. Absentees or refractory conscripts underwent corporeal punishment, and were each amerced in the sum of about L. 120. This sum, together with the expences incurred in his apprehension, was levied upon the property of the father or mother, when the fugitive possessed none of his own. Conscripts absenting themselves were liable to the same penalties as deserters; namely, 1st, Death. 2d, The punishment of the ball. This penalty consists in the attachment of an iron ball, of about eight pounds weight, by a chain of seven feet in length, to the leg of the culprit. He was clothed in a dress of infamy, and condemned to hard labour during ten hours daily, and in the interval of rest to be chained in solitary confinement. The duration of this punishment was commonly ten years. 3d, Public or hard labour for a term of three years. A fine of about L. 150 was inseparable from all cases of desertion.

"To secure the fidelity of the executive officers, a host of informers was employed. The utmost rigour was exerted, and publicity given to the infliction of penalties, in order that the quickening impulse of fear might have an influence on the general mass. Frequently the regular levies were anticipated by law, so that boys unable to bear the accoutrements of a soldier were obliged to join the army. Every new conscription spread consternation through all the families of the empire. When the conscription law was first framed, it was thought the strength of the army would be kept up by adding one-fifth annually, but it often required a third, and sometimes a half. Such a proportion of recruits for an army, amounting to from seven to eight hundred thousand, was much felt even in so populous a country as France. To evade the operation of this rigorous law, the public functionaries were sometimes bribed, and disabilities feigned under the direction of medical men, who received large rewards for their services. As an instance, a surgeon's apprentice was accused of having blown into the eyes of a number of conscripts a powder, calculated to excite inflammation; for this service he received from each somewhat more than L. 200. These facts will sufficiently account for the rigorous inspection of those conscripts who claimed an exemption from joining the army in consequence of defects or infirmities.

"On the restoration of the King an attempt was made, but in vain, to fill up the ranks of the army by voluntary enlistment. The conscription is therefore continued, although it must be confessed it is no longer the terrible warrant of death that formerly bore that name. The period of service is now limited to five years. Mr Matthews, in his 'Diary of an Invalid in the years 1817, 1818, and 1819,' gives an interesting account of the drawing for the conscription at Montpelier.—'The drawing (he says) was an amusing scene, and truly French. The people assemble in a sort of amphitheatre: the prefect presides: the names of all those of the prescribed age are called over, and every person, of whatever rank, high or low, answers to his name and draws his lot. If he is absent, the prefect draws it for him. When any one drew a number above the complement required, thereby insuring his own exemption, his antics of joy were in the highest degree comic; and when the number was within the complement, the exultations of the spectators, whose prospects were thereby bettered, were expressed with the loudest applause, without any consideration for the feelings of the drawer. The present assessment is light enough, as may be collected from the price of a substitute, who may now be procured for five hundred francs (L. 20,) whereas in Napoleon's time the price has been as high as fourteen thousand francs (L. 560.)" Pp. 33-35.

Regulations very neary allied to those existing in France are adopted in the army of the king of the Netherlands, as we learn from Kirkhoff's Hygiene Militaire. The recruiting of the Prussian army is also conducted by involuntary levies, every man in the country becoming available for the service of the state as a soldier on his attaining 20 years of age; and of the regulations adopted in the Prussian service for the medical examination of recruits, we are furnished with an abstract by Mr Marshall.

The strength of our own army, it is well known, is kept up by voluntary enlistment, in so far as an act can be considered voluntary, which, in perhaps nine cases out of ten, originates not in a deliberate preference of a military life, but in some boyish fancy, some domestic broil, or in want of work and its immediate result, great indigence.

"There is a very objectionable description of recruits often met with in large cities, namely, young men whose health has suffered from debauchery of various kinds. Their peculiar appearance is commonly well marked; complexion wan and colourless, doughy sodden look, tremulous lips and hands, clean teeth, breath and smell peculiar to spirit drinkers; often fulness of the belly and tendency to fatness; their manners and language of the better kind; this class is usually composed of footmen out of place, clerks, shopmen, broken tradesmen, profligate irreclaimable sons of gentlemen, &c. &c. I know no species of recruits more unfit for the service; they are seldom out of the guard-room or the hospital." P. 69.

We consider it superfluous to follow Mr Marshall through that section of his work which treats of the leading qualities required of recruits, because this is merely an amplification of a paper inserted in a recent number of this Journal.

The remainder of the work is devoted to some very interesting observations on feigned diseases and disabilities, and here Mr Marshall very truly remarks, that " There is a much greater proportion of malingerers in some regiments than in others, a difference which may perhaps in part depend upon the discipline of a corps, the conduct and general demeanour of soldiers being greatly influenced by the nature of the discipline under which they are controlled. But with regard to the simulators of disease or disabilities, I am disposed to think that they never become numerous in a regiment, when the surgeon possesses experience, and that peculiar tact which enables him not only to detect malingerers, but so to adapt the means to the end as to induce them to give in." P. 91.

We regret that our limits prevent us from following our author minutely through that division of his work in which he treats in succession of those particular disabilities which the soldier has most frequently been known to feign ; this contains matter not less curious than instructive, but for the present we must content ourselves with the following selections. Amongst the feigned affections of the eye, amaurosis has been simulated by the application of the extract of belladonna round the eyelids, " and above two hundred conscripts in France succeeded by this means in being declared amaurotic." P. 112.

When internal pains are complained of, unaccompanied with other obvious symptoms of disease, however far our suspicions may carry us, the satisfactory detection of an impostor is not easy ; and, as Mr Marshall observes, " This is perhaps the most frequent class of ailments assumed by recruits to accomplish their rejection, and by old soldiers to obtain their discharge. They commonly think nothing more is required to render their defect plausible, than to affirm that they have pain in some part of the body, assume the aspect of suffering, and affect decrepitude or loss of power in the limbs or joints. The back, loins, and hips are the parts usually selected, the knee, ankle, and superior extremities less frequently. Soldiers are well aware, that to simulate such internal diseases as fits, spitting of blood, incontinence of urine, &c. with a reasonable chance of success, requires a knowledge of symptoms and sensations with which they are generally unacquainted ; hence they are afraid of betraying themselves, and less frequently simulate this class of ailments. They seem to consider the constant use of a crutch or stick, and a ready submission to such remedies as blisters, issues, &c., as irresistible proof of the reality of their disease. Recruiting depôts and general hospitals furnish numerous examples of imposition of this kind, and the best directed management frequently fails in making them return to their duty as good soldiers. When the health is good, and the seat of the alleged pain unaffected by swelling or increased temperature, a medical officer will probably in nineteen of twenty cases be safe in concluding that no material disease exists.

" In cases of simulated lumbago, where persons remained bent nearly double, Baron Percy was remarkably successful in his attempts to produce conviction by engaging them in an interesting conversation, while an assistant approached insidiously, and pricked them on the posteriors with a long needle. Mr Bourchier of the 36th regiment had a suspected case of lumbago lately under his care, which had for a long time resisted all his remedial measures. He at last introduced a little tartar emetic into the man's food, which producing sickness and nausea, he began to think that he had become really ill; he sent for a priest, and virtually gave in by promptly returning to his duty." Pp. 116–118.

Under the head of paralysis, Mr Marshall gives us an account of some very provoking and successful cases of imposition, and mentions others in which " very simple means have sometimes been influential in detecting an impostor, and fraud has been discovered where its existence was hardly suspected. During the late war, when troops were often suddenly moved, a number of the sick was sometimes transferred to the charge of the surgeon of the relieving corps. Under these circumstances, a few cases fell under the care of Dr Barrie, surgeon to the Renfrew militia, while this regiment was quartered at Bristol. Among them was a private of a cavalry corps, who asserted that he had lost the power of both arms; he had been long in hospital, and treated successively by a number of medical officers, upon the presumption that the defect was genuine. He was fed, dressed, and undressed by an orderly, and each superior extremity hung like a pendulum by his side. Upon examining the arms, they were found to be extenuated, and considerably softer than natural. The doctor was, however, not quite satisfied with regard to the apparent loss of power of the arms, and consequently delayed to make up his mind on the case. While he was from time to time investigating the symptoms, it appears to have struck a half-witted fellow, who was in hospital more for the purpose of keeping him out of harm's way than on account of disease, that doubts were entertained respecting the man's disability; for one morning the doctor was addressed by the idiot as follows:— ' Do you think ——— has lost the power of his arms? I ask this question, because I saw him yesterday in the necessary, where he used them as well as I did mine!' The impostor denied the statement, and persisted in averring his complete loss of voluntary power of the arms. He was soon after brought to the notice of the staff-surgeon of the district, who recognized him as an old offender, and one who had served in the same regiment with himself. Finding that no hope now existed of the success of his scheme, he gave in; and when Dr Barrie next visited the hospital, he found his paralytic patient scrubbing the floor of one of the wards.

" Perhaps few impostors have displayed more fortitude than a private belonging to the 10th regiment, while it was on duty in the Mediterranean. This man pretended that he had lost the power of his inferior extremities, and for a period of about two years endured all that medical skill and suspicion of his testimony could suggest, with the view of enabling or forcing him to return to his duty. Before recommending him to be invalided, his medical attendant submitted him to the following trial:—He was confined in a small room, and a shelf well stored with provisions suspended over his head, which he could easily reach by merely standing upon his legs, but not otherwise. At the end of forty-eight hours the food remaining untouched, it was not considered advisable to prolong the experiment. He was then included in the list of invalids, and put on board a transport bound for England. While in the harbour, an alarm was given, about midnight, that the ship was on fire; every one hurried into a boat alongside; after reaching the quay, the passengers were mustered, and it was found that the paralytic invalid had not only succeeded in saving himself, but also his trunk and clothes. He was remanded to the ranks." Pp. 123, 124.

Under the head of epilepsy, we are furnished with many interesting observations, which we would particularly recommend to the attention of our readers. A good deal of this section of Mr Marshall's work has been anticipated in his former paper in this journal, and we would now only observe, that "no dependence can in general be placed upon the testimony of a soldier in regard to the origin and duration of this disease, or the account he gives of the sensations which precede or follow a paroxysm. Our conclusions must therefore be chiefly drawn from external symptoms; in a great many instances the deception in a feigned paroxysm is easily discovered, but cases sometimes occur where the symptoms are simulated with so much art, and the schemer endures irritating applications with so much fortitude, that it is difficult to detect the imposture. Some individuals have undergone extremely rigorous trials, even the application of the actual cautery, without flinching, and the most cautious medical officers have been deceived. There was a soldier of the 91st regiment, who, in consequence of misconduct, had been sentenced by a court martial to receive corporal punishment. Upon being brought to the triangles to receive his punishment, he feigned a paroxysm of epilepsy so effectually as to deceive the medical officer. A similar supervention of contortions and violent gestures occurred the second time he was paraded for punishment, and with equal success. He was brought out a third time, and again the same plan of deception was tried. The medical officer, presuming that the fits were brought on by the passion of fear, was proceeding to the commanding officer, to state that the man was then and perhaps would be at any other time unable to receive punishment, when he happened to look behind him, and saw the eye of the patient watching his motions. This led to his detection, and he received his punishment instantly." Pp. 131, 132.

Involuntary convulsive actions of particular and limited parts of the body have also been sometimes simulated, and occasionally very successfully exposed, as in the following instance, which was narrated to us by a distinguished naval surgeon. A seaman pretended to have a convulsive action of the muscles about the neck and upper part of the trunk, so as to produce an involuntary and incessant shrugging of the shoulders. The surgeon, under pretence of being very desirous to ascertain how often the alternate elevation and depression of the scapulæ occurred in the day, set some of the man's comrades to watch him, one of whom made a mark upon a board with a piece of chalk for every shrug of the impostor; he held out for nearly four and twenty hours, and then exclaiming, " by G—d you have done me !" offered to return to his duty.

Under the head of *intellectual weakness, alienation of mind, &c.* some very interesting matter is contained in Mr Marshall's work, and the following is a case, by no means singular, in which what is termed a *half-witted* fellow has sometimes succeeded in procuring a subsistence for a series of years.

" Last year a recruit, named Timothy Regan, was discharged from the Company's service, at Chatham, in consequence of weakness of intellect. A few months after he was brought before a medical board, at Fort Pitt, for the same defect, he being then a recruit in one of the regiments of the line. It was then discovered that he had in a very short time received six bounties. He persisted for a short period in denying, with great effrontery, that he had enlisted repeatedly; but he at last admitted the charge, and endeavoured to pass the whole business off as a good joke. He was finally ordered to join the 57th regiment, one of the corps in which he had enlisted." P. 138.

The successful detection of an imposture is always likely to engender the most rancorous feelings in the mind of the individual exposed towards his medical attendant; and the following is an instance in which the surgeon forfeited his life in consequence of his successful exertions in cases of this kind. The practice of simulating *physconia* had, it appears, existed at one time to a considerable extent amongst the men of the 2d battalion of the Royals, and " prevailed in some degree in 1821, when the late assistant surgeon Bolton assumed the medical charge of the regiment. Being an active zealous officer, he exerted much of his time and talents to reduce a heavy sick list, and to suppress that disposition to malingering which had got among the men. This measure rendered him odious to impostors, as the event too clearly showed:—One morning, when he was going to the hospital, while the regiment was on duty at Trichinopoly, a schemer and late patient of his, named Downhard, presented his musket at him. Mr Bolton saw the motion, held up his hand, and begged him to desist. Downhard took the musket from his shoulder for a moment, but returned it, saying, ' No, sir, you blistered me, &c. &c.; it must be done;' and then fired. The ball passed through Mr Bolton's body, and he expired a few hours after. Downhard was hanged in front of the regiment, glorying to the last in the atrocious act he had committed." P. 153.

"A disposition to malinger and feign disease is one of the most disqualifying disabilities with which a soldier can be afflicted. An old soldier who attempts to simulate a defect, and persists in his plan of imposition for a little time, is frequently lost to the service, notwithstanding every means that may be tried to bring him to a proper sense of his duty. Recruits and young soldiers are generally reclaimable. Impostors, who prosecute their schemes with art, who possess great fortitude and an inflexible resolution, must sometimes succeed in obtaining their discharge, either by making fraud appear to be more probable than truth, or perhaps more frequently by exhausting the patience of medical and commanding officers. It is only after some experience that a medical officer is aware of the difficulties he has to encounter, in his endeavours to reform thorough-paced malingerers. Let him be ever so assiduous, and adopt the most judicious measures for the recovery of simulators, who suffer under some real although only trifling cause of inability, he will not seldom find his measures rendered nugatory by their unwillingness to be restored to the ranks, and the pains they take to retard convalescence; he will also find himself much perplexed how he ought to act for the purpose of rectifying the mental aberration or moral obliquity of schemers, whose disabilities are merely pretended. Impostors often display a spirit of invention, and an art in concealing fraud, which could not have been anticipated. The mind, by becoming concentrated on one object, appears to acquire new powers; so that persons with naturally weak intellects have evinced a tact and dexterity in the prosecution of a scheme, far beyond what their previous conduct would have warranted us in assuming. In coming to a conclusion, with regard to the measures which should be adopted with detected simulators, commanding officers have frequently only the choice of two evils;—to recommend the discharge of a man, or to retain him in the service with scarcely any prospect of his being a useful soldier. When an impostor is discharged, he almost invariably throws of the mask abruptly, and boasts of the success of his artifice, thereby giving a bad example to his comrades, and one which may be influential in exciting them to imitation. To retain a malingerer in the service is likewise liable to injure the morals and discipline of a corps. Many a simulator will hold out, not only for several months, but for a number of years, probably passing his time chiefly in hospital; and during all this period the contagion of bad example is in operation, by the influence of which, individuals, who would have continued to be good soldiers, have been seduced from the strict path of duty, and induced to feign disabilities, and to persist in schemes of fraud with the most inflexible obstinacy." Pp. 184–186.

Mr Marshall's work is concluded with an appendix containing various official returns, and other documents highly instructive to the class of practitioners for whom this volume is intended. Indeed, we may assert without hesitation, that we have not seen any work which appears better adapted to the object in view; and the distinguished individuals at the head of the medical departments of the army and navy will, we have no doubt, enforce the study of it upon all candidates for the public service. Its contents ought to be as familiar to every medical officer as the standing orders of the army; and, independent of its value to those engaged in the study of medical jurisprudence, its perusal by all classes of the profession is, we think, well calculated to support an opinion very generally entertained by military and naval practitioners, that, in addition to the usual sources of professional instruction, something more is requisite to qualify medical men for the effective discharge of their duties as public servants of the state; that, in short, the term *military surgery*, if it be understood to comprehend the whole of the duties devolving upon an army or navy surgeon, is not so much a misnomer as it has sometimes been represented.

Art. VI.—*Delineations of the Origin and Progress of various Changes of Structure which occur in Man and some of the inferior Animals; being the continuation of Works already published on this Subject.* By John Baron, M. D. F. R. S., Physician to the General Infirmary, and Consulting Physician to the Lunatic Asylum at Gloucester, &c. London, 1828. 4to. pp. 56. Four Coloured Engravings.

To all those who take interest in the progress of pathological inquiry, the hypothesis which Dr Baron some years ago proposed to explain the origin of tubercles in the tissues of the animal body must be well known. That hypothesis, it may be remembered, is distinguished by assuming the facts, that tubercles are at commencement small vesicular bodies with fluid and transparent contents, and that these vesicular bodies are the same as the parasitical animal known under the name of hydatid. We say "assuming the facts;" for we never could perceive that the ingenious author had succeeded in demonstrating that tubercles were vesicular at any period of their growth; much less could we admit that these vesicles were of the same nature with the hydatid. Bayle indeed described the miliary tubercle as translucent or semitranslucent; and Laennec showed that this is merely the incipient or nascent state of tubercles which are afterwards found to become opaque and grayish. But in no case were their contents said to be fluid; and in no respect could they be compared to the hydatid.

In the lungs of the sheep and other animals, in like manner, we have more than once seen minute granular bodies, opaline and semi-translucent, but hard and cartilaginous in consistence. What these bodies, so minute, so hard, and so numerous, might have become, we do not feel competent to say. But neither from their present characters, nor from any other circumstance, did it seem probable that they had been or were to terminate in hydatid cysts or vesicles. In short, whatever be the ingenuity with which Dr Baron studied to uphold his opinions and persuade his readers of their truth, nothing like accurate evidence was adduced; and they continued in the shape of an unsupported hypothesis, not requiring refutation, because never founded on the basis of fact; and never generally admitted, because in direct opposition to any accurate knowledge on the developement and growth of tubercular disorganization.

Of the weakness of his hypothesis Dr Baron appears himself not to be unaware. He nowhere positively states that he has traced the transformation from the vesicular or hydatidiform condition to the opaque, firm, and tubercular structure in the tissue of the lungs; and it is only by applying to these organs, what he recognizes in the liver, that he ascribes to this source the formation of tubercles in the human lungs. The evidence which Dr Baron adduced in favour of his opinions was derived almost exclusively from the liver of the sheep, the rabbit, and others of the inferior animals; and whatever be the accuracy with which he describes the appearance of these growths, the changes which they undergo, and the effects which they produce on the health of the animals, they admit of little direct or useful application to the developement and growth of tubercles in the lungs, either of the human subject or of the lower animals.

In the present work, which forms a sort of practical illustration of the two preceding ones, Dr Baron undertakes to illustrate still more fully and forcibly his peculiar opinions on the generation of tubercles in the textures of the animal body. We do not perceive, however, that the application of that part of his theory, which pertains to the growth of hydatids of the liver, is in the smallest degree more immediate than before; or that Dr Baron has succeeded in making any decisive progress in establishing the general accuracy of his opinions.

Premising that the delicate texture of the lungs presents greater difficulty to the distinct investigation of the morbid changes which take place in their substance than the liver, in which the slightest change, he contends, is easily distinguished; and maintaining also, that it is an organ more frequently diseased, he adopts it as the source of the illustrations now to be adduced. Notwithstanding this admission, he denies that the facts thus established are applicable to this organ only ; and he reminds the reader, that he does not relinquish those views which induced him to maintain that the description which is accurate in relation to one class of disorganizations is equally applicable, *mutatis mutandis*, to others.

The first traces of tubercular deposition in the liver become visible, according to Dr Baron, by two circumstances,—the unusual enlargement of the lymphatics, and the formation of minute vesicles,—generally conjointly, sometimes separately.

In a liver becoming diseased, the first thing which meets the eye is a manifest enlargement of the lymphatics, which occupy a larger proportion of the liver than natural, and which, though still transparent, soon become opaque, white, and pearly coloured. A section of the organ at this period gives a mottled appearance, not unlike that of the section of a nutmeg, the ramifications of the lymphatics being opaque blue over the brown ground of the hepatic substance. As the disease advances, a great disproportion takes place between the new white deposit and the sound parts. The former greatly predominates ; and ultimately the brown remains of the glandular texture of the liver are entirely removed, and an opaque whitish hard mass, which Dr Baron terms scirrhous, is left in its place. This is the course in the first kind of change.

The second is represented by Dr Baron as originating in two modes ; one consisting in the expansion of the point of intersection where different branches meet ; the other in the formation of a vesicle in the course of a lymphatic trunk,—in other words, the expansion of a trunk into a vesicle. The vesicle thus developed in either situation is at first small, but gradually enlarges.

> " As it increases in size in every direction, a small portion of its circumference is seen like a transparent speck around the dark surrounding texture. This part becomes more visible as the body grows ; and as its magnitude increases, the manner in which it dispossesses the true texture of the part where it is formed is beautifully seen. In the liver, where the glandular texture is divided and subdivided, these partitions may be perceived gradually expanding like a thin film or curtain over the increasing growth of the vesicle. After a time they are completely absorbed, and the boundaries of the disorganization become clearly defined."

Of these two modes of disorganization described by Dr Baron, the difference is that the former, that of the lymphatics, leads to a dense scirrhous texture without appearance of tuberculous disorganization; while the latter, that commencing by vesicles, forms circumscribed tubercles or tumours. When the two species of morbid action are combined, which is not uncommon, a compound structure, partaking of the characters of both, is the result.

The general accuracy of these statements is illustrated by the first, second, fourth, and fifth figures of the first engraving, as seen in the liver of the hog, and in the second, as seen in the human liver, and in the first figure of the second engraving as seen in the liver of the sheep. In the second figure of the same is seen this change of structure in the lung of the sheep, and in the third, in that of the horse. The description of the state of the lungs in the latter deserves particular attention.

"On examining the lungs (of a glandered horse) their healthy texture seemed at first sight but little changed. They retained their purplish hue, and their light elastic feel. On closer examination, a number of circular vesicles were seen; some being transparent, and others of an opaque yellow colour. Others had an oblong figure, and seemed clearly to have been formed in the course of transparent vessels, which, from their character and appearance, I took to be lymphatics. I endeavoured to ascertain this point by attempting to inject them with quicksilver; but I failed in my design." In this account an omission, not altogether unimportant, is committed, in not stating whether the vesicles contained fluid, and in not ascertaining whether they were not mere ruptured or enlarged cells,—a change of structure not uncommon in the lungs of the glandered horse.

With the view of illustrating more forcibly the formation of tubercles, Dr Baron narrates the particulars of an experimental investigation which he performed on a family of young rabbits, under the influence of confinement and improper food. These animals when first shut up, about the end of April 1825, were perfectly healthy in appearance. One died on the 3d June; and on the external surface of the liver were found many transparent vesicles about the size of a pin head, with distinct enlargement of the superficial and deep-seated lymphatics. On the 12th, died another rabbit, in which the liver was light coloured, enlarged, and studded with tubercles semitransparent and opaque, firm and yellow, with similar disease of the lymphatics. In a third rabbit, which died on the 16th, the morbid process was still farther advanced. One lobe was universally occupied by miliary tubercles, projecting from the outer surface, so as to give it a granular appearance, and so numerously as to disguise the hepatic structure in an irregular straw-coloured mass. To the lower surface of the liver was attached an hydatid about the size of a hazel-nut. In a fourth rabbit, which died on the 18th, the liver contained many large tubercles, though fewer than in the last case, and more detached, the interstitial substance being sound. To the lower surface of the organ were attached several hydatids not quite globular, becoming opaque, and with contents like calves'-foot jelly.

At this period Dr Baron removed from the place in which their companions died, three survivors, with all the external signs of labouring under the same disease which had already been the cause of the mortality. They were emaciated, with tumid belly, and scaly, harsh, unhealthy skin. Their new abode was kept dry and clean; and they were fed chiefly on bran and oats, with a moderate proportion of clover and dandelion.

" About ten days after the change had taken place, I killed one of them. The animal had increased a little in flesh, but the other external signs of disease existed, and the progress of the internal disorganization had not been arrested. The liver was very much enlarged, and there was a greater developement of the whole of the lymphatic system of the organ than in any other of the former instances. There was also a very great number of tubercles of different sizes and different stages of their progress, so that scarcely any part of the liver remained in a sound state. In Plate III. Fig. 2, will be found a representation of this diseased part. I present it to the reader, to show how far change may take place, and yet the healthy condition of the part be restored. In order to put this point to the test, I killed the fellow of this last mentioned rabbit on the 5th August. It had been fed exactly as I have already described. It was very much improved in health; and on examining the liver it was found comparatively in a sound state. Its colour was natural; it was not much enlarged; and there were only a very few tubercles discernible in it.

" So far as the foregoing facts lead us, they are interesting both in illustrating the origin and progress of the disease in question, and in giving us some hints respecting their treatment. The evidence that all the rabbits were diseased, is as strong almost as it can be. They were all affected with the same external signs; and till their diet was changed were all falling under the influence of the disorder. The lives of the three that remained were obviously saved by this change. In the first that was killed after it had taken place, the health was improved, but the local disease had not been arrested. In the second, not only was the general health improved, but there was also great reason to believe that a considerable removal of the external disease had been effected.

" I trust it will not be thought that this inference is overstrained; the traces of the disorganization of the liver being discernible, and all the other appearances of the animal denoting that it was diseased like its companions."

These morbid changes, which Dr Baron afterwards traced in the lungs of the sheep, those of the horse, and in the liver of the hog, he ascribes originally to the agency of the lymphatics, which he maintains may be seen effecting in the bodies of the lower animals that transformation, the result of which only can be recognized in the human subject. Having established this point in relation to the liver in these animals, he applies it to the lungs of the human subject, and adduces in confirmation the case of a man cut off under diabetic symptoms, in whose organs tubercles were found extensively in various stages of developement. "The tubercles varied in size as well as in condition; some were perfectly transparent and not larger than the head of a pin; others were consolidated and about as large as a garden-pea. In the lungs, liver, and spleen, irregularly shaped scirrhous masses were formed by the aggregation of minute tubercles and by the enlargement of the lymphatics of the organ."

A still stronger confirmation of his opinions Dr Baron endeavours to derive from the successive changes which take place in the progress of ovarian disease, two cases of which he narrates. In these, indeed, some of the vesicles attached to the Fallopian tube were transparent, and others opaque, or approaching to opaque and solid. In this it is well known there is nothing uncommon. The application of the fact is, however, both different from what is commonly received, and perhaps may in some cases be the true one. The following statement may be given as the general inference which Dr Baron derives from his several facts and arguments:—

"In the lungs, the primary condition of the disorganizations is not less illustrative of the above description. The clear and untransformed vesicles may be seen here and there interspersed through its substance, or studded over its surface. In this state, unless they happen to be formed in great numbers, and at no great distance from each other, they cause but little interruption to the function of the part; but things do not remain long in this condition. A change, both in the diseased structure and the portion of lung connected with it, soon takes place; and, subsequently, all those progressive alterations occur which I have elsewhere endeavoured to describe."

Very much in the same manner he represents the occurrence of scirrhous degeneration to take place. One of the simplest varieties of this kind of morbid structure he describes as taking place in the following manner.

"The lymphatics of the part first show signs of disease. They enlarge and become opaque. The organ in which the disease occurs, if examined at the time, will exhibit a reticulated appearance. The size of the interstices depends of course upon the original distribution of the lymphatics. But as the disease advances, there is a corresponding diminution of the interstitial matter, arising from the approximation of the morbid parts. Ultimately they seem to coalesce, and thereby to form the dense, firm organization called scirrhus. This is perhaps the simplest form of the disease. One of the most obvious and common modifications of its character arises from the developement of tubercles in connection with the changes described."

In these views we willingly admit, as we have before done, there is much ingenuity. They tend to simplify, in a remarkable degree, whatever ideas we have entertained on the formation and progress of morbid structure. They enable the pathologist to form a distinct and tangible idea of that which was formerly confused, vague, and impalpable. They present him, in short, a sure resting-place, on which he may fix his wandering thoughts in an inquiry arduous, complicated, and obscure; and they encourage him to think that he at length sees clearly explained what was before dark, confused, and unintelligible. More than this, however, they do not accomplish. The premises, when carefully traced, do not legitimately and directly lead to the conclusion. When divested of every bias, and of all unnecessary circumstances, we examine the relation between the vesicular or hydatid bodies found in the livers of the lower animals, and the tubercles which in the lung of the human subject constitute the pathological cause of consumption, it is impossible to perceive that the relation is that of sequence, or of cause and effect. Conceding to Dr Baron for the sake of hypothesis the assumption, that what is true of the former must be true of all other forms of disorganization, which, nevertheless, is a principle greatly too general for the present state of science, it is impossible to allow that the application holds good in the case of pulmonary tubercle.

On a former occasion we took the liberty of adducing such facts and arguments as the question then seemed to require, in order to place its actual merits in the true light.* With this subject, therefore, it is unnecessary again to occupy the time of the reader. But it is surely manifest, from the fair account which it has been our study to give of the inquiries and arguments of Dr Baron, that between the fact with which he sets out generally,—the conversion of the vesicular cyst of a sheep's liver into a purulent one, or afterwards a solid body, and the conclusion at which he arrives, that the pulmonary tubercle is originally a vesicular cyst of the same kind,—a chasm abrupt, immense, and impassable is left. Even the circumstance of tubercles being found in their origin transparent, a point never doubted, and explained, as we conceive, by Laennec, is not applicable to the argument. These bodies, instead of being vesicular and containing fluid at this period, are solid, firm, and cartilaginous in all the instances hitherto observed accurately. Nor has Dr Baron yet adduced positive or satisfactory evidence to the contrary.

The train of argument employed by Dr Baron is further corrupted by another fallacy, in the circumstance of regarding the hydatid as susceptible of the changes which he describes. If the cysts which Dr Baron finds in the liver of the rabbit, the sheep, and the hog, be really hydatids, that is, animals propagated according to a certain law, so far as we are at present aware, no well authenticated facts lead to the inference, that these fluid contents undergo the changes which he represents to take place.

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* Medical and Surgical Journal, Vol. xix. pp. 298, 299, &c.

On the influence which Dr Baron ascribes to the agency of the lymphatics in effecting these changes, we do not feel competent to offer any opinion. In its present state the matter rests very much on his testimony as an accurate observer. To every one, however, who knows anything of the nature of evidence required in support of pathological opinions such as the present, it is obvious that nothing short of injection should satisfy us as to the fact, that the morbid change actually originates in that system of vessels. The reasonableness of this condition we trust Dr Baron will not himself dispute; and if he establishes this point it certainly must go so far in demonstrating the truth of one part of his hypothesis.

The objections now adduced apply solely to the inferences which Dr Baron causes to flow from the facts which he advances. The latter possess much actual merit, whatever be the ultimate fate of the hypothetical opinions which they are made to support. To this merit we have more pleasure in bearing testimony, in so far as we feel ourselves compelled to withhold our assent from the conclusions derived by the author. Had he divested his mind of the hypothetical prepossessions by which it has been biassed,—had he confined his inquiries to the simple phenomena observed in the rise and progress of the organic changes which form the subject of investigation, Dr Baron would have formed a more valuable accession to the stock of facts accumulated on this head than his work in its present form does. With this deduction even, it cannot be doubted that the facts which he establishes throw some interesting illustrations on the effects which diet and regimen exercise on the health of animals, and on the intimate atomic structure of their organs.

Art. VII.—*Transactions of the Medico-Chirurgical Society of Edinburgh*, Vol III. Part I. Printed for Adam Black, Edinburgh; and Longman and Co. London. 1828. Pp. 316. 8vo.

THE Edinburgh Medico-Chirurgical Transactions continue to improve in value as the Society grows older. And we have a pledge for the permanence of this improvement in the fact, that it has taken place although the present publication has not received the powerful support of the senior members, who have contributed the most material part of the former transactions. The society have acted wisely in resolving to publish only a half volume. This system will enable them to be more select and rigorous in the choice of papers; as it is evident that, when contributors are assured of their productions appearing within a twelvemonth, many will come forward, who through fear of being anticipated, or the impatience of their ambition, cannot submit to the pain of hope deferred throughout two long years. But it is to be trusted that the Council will see in these circumstances additional cause for the exhortations we formerly gave them to the fearless discharge of their duty as censors of the press. In particular, we would beg them, for the society's credit, and that of Edinburgh medicine generally, to exercise their office, even with severity, in respect to mere Cases, which are certainly but seldom fit company for the elaborate essays of a Society's transactions, how well soever they may become the lighter and more ephemeral pages of a Journal. There are exceptions, no doubt, to this rule; but we may venture to say, that if they consult the opinion of their constituents, they will find a few of the cases in the present half volume might have been spared with advantage.

The topics of the papers are unusually diversified. Excluding single cases, there are two surgical monographs, three on topics in practical medicine and pathology, two in anatomy, and two in physiology. The most prominent contributors of these are Mr J. W. Turner, Dr Alison, Dr Davy, Dr Boggie, and Dr Grant. Among the cases, eight in number, the most important are those of Dr Simson and Dr Molison.

The surgical papers are seven in number; one on hospital gangrene, another on the sudden obstruction of the larger arteries, and five detached cases, the subjects of which are—crural hernia—extraction of a polypus from the root of the tongue—malformation of the neck of the thigh bone—strangulated umbilical hernia—and a peculiar morbid alteration of the patella.

The author of the first treatise, Dr Boggie, Surgeon to the forces, gives a succinct account of the result of his experience in hospital gangrene as it appeared in the latter periods of the Spanish war, chiefly with a view to establish that it generally originated in an inflammatory disposition, and was best treated by the most active antiphlogistic means. He describes it under two names, distinguishing *hospital gangrene*, an acute, from *Phagedæna gangrenosa*, a chronic variety. The former, he says, attacked the surface of wounds or ulcers, and commenced with stinging pain, flabbiness of the granulations and serous or sero-sanguinolent vesicles over the surface of the injured part; which appearances were followed by stoppage of purulent secretion, and the discharge of an ash-coloured matter, then by an ichorous discharge of a peculiar smell, reversion of the edges of the wound, surrounding erysipelas, inflammation of the neighbouring lymphatic glands, fever, rarely typhoid, more generally inflammatory, and the gradual formation of a slough. The latter or chronic variety attacked chiefly old sores in patients long in hospital, and commenced with one or more small dark-coloured spots or ulcers near the edge of the sore, circular, ragged, excavated, coalescing, extending gradually over the sore, not at first accompanied with fever, but as soon as that took place, spreading with increased rapidity. We suspect it may admit of doubt whether most army and navy surgeons would on the whole agree with the author in giving the title of hospital gangrene to both these varieties of disease, and whether some of them might not be inclined to reconcile the discrepance of opinion, which, as will presently be seen, exists between him and some previous authors as to the nature, causes, and treatment of hospital gangrene, by maintaining that part at least of the discrepancy is owing to his having understood the term in too comprehensive a sense,—to his applying the name to gangrenous inflammation.

Dr Boggie also differs from some recent authors in assigning to hospital gangrene a great variety of causes, namely, atmospherical peculiarities, inattention to cleanliness, irritating applications to wounds or sores, stimulating food, intemperance, motion or other mechanical irritation, and specific contagion. The tenor of his opinion, as deduced from his inquiries on these several heads, appears to be, that hospital gangrene, or at least a disease capable of propagating itself by contact or contagion, may arise from any of the irritating causes enumerated, more particularly when several of them co-operate, and when the influence of climate or atmosphere is favourable. In support of this opinion he has adduced a number of interesting and valuable facts, which certainly show that a disease like hospital gangrene may arise from various irritating causes; but it does not appear to us that he has brought forward any distinct evidence to the effect, that the disease which arose from each of these causes was seen by him to propagate itself by contagion.

Perhaps the most important of the particulars related by Dr Boggie in this part of his essay regard the tendency of too early and free exercise to induce hospital gangrene,—in the sense in which he uses that term. Dr Hennen has mentioned in his Principles of Military Surgery a pointed instance to this effect, which took place after the battle of Vittoria, and of which Dr Boggie was also an eye-witness. Among other facts of the same nature now added by the latter gentleman we may quote the following.

"In the beginning of August 1809, a few days after the battle of Talavera, when so many of our wounded fell into the hands of the enemy, the slighter cases only effected their escape, some on foot, others on mules or cars. Few or none of these men had been in hospital after the battle, but had been lodged in convents and private houses, and although the wounds of all were in a most promising state when they began their flight, they had not been many days on the road before evident signs of the disease became manifest. Many, I have no doubt, must have died on the journey, and when the survivors reached Elvas, which was the nearest station on the frontiers of Portugal, distant about forty leagues, the disease continued, and raged with unexampled violence." P. 24.

"I shall never forget the appalling spectacles I beheld in the unfortunate men who effected their escape from Talavera. Though the wounds of many of them were slight, and no doubt would have soon got well had they remained at rest, and on the antiphlogistic regimen; yet in a few days, in consequence of the motion and other irritating causes to which they were subjected, they were to be seen in all stages of the disease, from the state of incipient inflammation to that of gangrene, and even sphacelus, and loathsome from the quantity of maggots with which they were infected." P. 30.

It would have been very material for Dr Boggie's views of the nature and causes of the disease had he furnished some proof, that, when thus induced, it was distinctly communicated afterwards by contagion,—that it spread, for example, to those in whom it could not be accounted for by the operation of some one of the irritating causes mentioned above. But his essay does not contain any satisfactory evidence of the kind.

Another important statement under the head of the causes, relates to the tendency of intemperance to induce the disease. He maintains both that the immoderate use of wine and spirituous liquors during health lays the system more open to the operation of occasional causes when a wound is subsequently received; and likewise, that the practice of giving the wounded a liberal allowance of wine at the time the disease prevailed, "under the idea that it could not be prevented, unless by stimulant tonics and antiseptics," instead of having the desired effect, "rendered it much more virulent, and even perpetuated it in the hospitals."

This observation leads us to the material feature in the author's views of the nature of the disease, namely, that the source of the gangrenous disposition did not lie in a typhoid tendency, as was for a long time generally imagined by our army surgeons, but on the contrary, an inflammatory diathesis; and that the accompanying fever was not a typhoid, but a phlogistic fever. Dr Hennen brought over his brethren half way to our author's mode of thinking, by showing that a typhoid fever was by no means essential to the disease, because in the Bilboa epidemic subsequent to the battle of Vittoria, the symptomatic fever, which during the hot weather he conceived was typhoid, became inflammatory as the cool weather set in. But Dr Boggie advances much farther on the road of reform.

"This," says he, (alluding to Dr Hennen's description,) "is not what *a priori* might be expected, and is very different from the opinion one would naturally entertain on the subject. The fever [at Bilboa,] appeared to me *from the first to be highly inflammatory*, that is, immediately after the injury was received, and at a time when the heat of the season was at its maximum; and that it became more mild when the temperature fell, or when the sedative effect of the cold began to be felt; but it was not until the antiphlogistic treatment was fully established, that any remarkable decrease in the mortality took place." P. 20.—"When hospital gangrene," adds he in another place, "occurs in a recent wound, and in young healthy men, or in men of the middle period of life, who are most frequently the subjects of it, the accompanying fever is almost always inflammatory. I have seen but few exceptions to this. Indeed, it is not easy to conceive how so many should have adopted the contrary opinion." P. 33.

Dr Boggie farther maintains, that Dr Hennen adopted his view of the altered type of the disease, as it appeared at Bilboa, in order to reconcile with reason the two very opposite modes of treatment which were adopted by the surgeons in charge of the hospitals during the progress of the malady. Dr Boggie seems also to suspect Delpech of having erred in suppposing that the fever in the French soldiers in Spain was always of a low kind; and insists besides that even if it was, its nature in the French soldiers,—who live temperately, are little disposed to violent inflammations, and were subjected during the latter years of the Spanish war to the depressing moral influence of frequent disasters,—could not supply any presumption of what would be the nature of the pyrexia in the British soldier, constantly elated by success, excited by a phlogistic regimen, and naturally of an inflammatory constitution. So striking a difference of opinion between well qualified observers of the same disease, and above all, the opposition both in fact and in opinion between practitioners who made their observations in the same hospital and about the same period, might appear strange to one who had not previously witnessed as extraordinary contrarieties in medical statements. In the present instance, the discrepancy may be in part accounted for by Dr Boggie having perhaps included under the title of hospital gangrene cases which we have already said are not generally accounted such by army surgeons.

Dr Boggie's views of the nature of hospital gangrene lead him of necessity to recommend a strenuous antiphlogistic treatment, the details of which he has laid down with judgment and minuteness. His chief general remedy is of course blood-letting, carried even to the extent of three or four pounds, if that quantity was required to subdue the inflammatory state of the system. This practice, however, he restricts in great measure to stout constitutions, and cases of recent wounds. In his *phagedæna gangrenosa*, or chronic form of hospital gangrene, blood-letting, he admits, is generally inadmissible.

> " It has been already said that in that form of hospital gangrene named phagedæna, very great destruction of parts may sometimes take place, without the constitution being much affected by it. Now, if blood-letting is used in such a case, or even in the advanced stage of the true inflammatory gangrene, when disorganization has taken place and the system is sinking under the consequent debility, the vital powers being nearly exhausted, the result must be obvious: But when it is used with caution, and in cases where it is really applicable, it will be found, I doubt not, to be a most valuable remedy."

We apprehend the foregoing paragraph will let the reader into the secret of the author's peculiar opinions, or at all events will furnish the means of ready escape to those who are charged by him with having mistaken the nature of the malady as well as its treatment.

The only other constitutional remedy to which he attaches any importance is the frequent evacuation of the bowels by cathartics. Emetics, bark, cold affusion, and camphor, which some surgeons recommend, he found almost inert, wine positively pernicious, a restricted diet of essential consequence.

Under the head of the local treatment, he condemns poultices hot and cold, recommends such stimulating applications as the turpentine liniment, mixtures of the red precipitate and resinous ointments, dilute nitric and muriatic acids, or the citric and acetic acids, &c. He allows he had no particular experience of the effects of Dr Blackadder's favourite remedy, arsenic; admits it would probably have been applicable to many of the causes which came under his notice, but doubts whether it would have answered in the early stage of the inflammatory form of the disease.

He concludes with a numerical statement of the mortality in the Bilboa hospitals after the battle of Vittoria, distinguishing three equal periods, the first being previous to the introduction of the antiphlogistic method of cure, the second being that in which the method related above was partially, and the third that in which it was fully in operation. During these three periods, the population of one great hospital, the Cordeleria, seems to have gradually decreased from 872 to 619; and the deaths in proportion to the population were in the first period 1 to 15, in the second 1 to 34, in the third 1 to 131. The proportion of cases of hospital gangrene among the patients was between two-thirds and three-fourths of the whole.

The second surgical treatise we shall notice is by Mr J. W. Turner, Professor of Surgery to the College of Surgeons, and is entitled "*On the Sudden Spontaneous obstruction of the canals of the larger arteries of the body; with some observations on the process employed by nature to prevent or arrest hemorrhage from lacerated arteries.*"

We shall follow a different mode of arrangement from that adopted by the author, and commence with the illustrations and historical statements he has given under the second division of his subject.

It has been long familiarly known to surgeons, that the tearing across even of a large artery, such as the axillary or femoral, is by no means always followed by material hemorrhage. But the fact had been long known before a satisfactory explanation was supplied, of the process by which the hemorrhage is prevented.

The late Professor Beclard appears to have imagined that it was left to him to make the discovery. Both in his *Additions* to Bichat's General Anatomy, printed in 1821, (p. 95,) and in his own *Anatomie Générale*, published in 1823, (p. 384,) he evidently lays claim to this merit. For he states that he had found by frequent observation in the human subject, and by repeated experiments on animals,—that the absence of hemorrhage cannot be ascribed either to the retraction of the artery, or to its external coat being drawn out into the form of an elongated cone over its open mouth,—but that the principal obstacle to the escape of blood is opposed by the laceration of its inner coats, their separation from the external coat, and the immediate formation of clots in the canal of the vessel.

For this claim of originality M. Beclard has been taken to task by Mr Turner with equal success and moderation. He quotes from Dr Jones's Treatise on Hemorrhage (1805,) an experiment to which the ingenious author does not appear to have attached so much importance as it deserved, and which is in almost every respect identical with the experiments of the French professor. On rupturing the carotid artery of a horse by forcible elongation Dr Jones found, that besides the clot formed externally, as in other injuries of arteries, there existed in its internal cavity a long clot adhering firmly to the inside of the vessel, in consequence of the inner coats having been lacerated at numberless parts and lymph effused at every laceration (p. 42.) Mr Turner also quotes from Dr Thomson's Lectures on Inflammation (1813) a passage where the author remarks, that in cases where hemorrhage does not follow rupture of a large artery, "the inner surface of the ruptured vessel will be found torn in various places, contracted and containing coagula," (p. 512.) And he further informs us, that several years before the publication of the Additions to Bichat, Beclard examined in the Museum of the College of Surgeons of this place a specimen of obstructed arteries, which was taken from one of the cases related in the present essay, and in which the laceration of the internal coats and deposition of internal coagula were pointed out to him.

In the course of the foregoing details Mr Turner takes the opportunity of communicating from Dr Thomson's Oral Lectures and conversation the facts which led that gentleman to the opinion expressed in his work quoted above. At an early period, antecedent it seems even to the planning of Dr Jones's treatise, Dr Thomson made experiments on this subject in the dead body; and he found, that the distending of an artery by the injection of a fluid into it caused, as Nicholls had previously remarked, laceration of its internal coats; and farther, "that the inner coats were separated from the external coat, and projecting into the canal of the artery, obstructed the flow of blood through it; and that if the fluid was continued to be propelled, it insinuated itself under the torn portions of the inner coats, and dilated the external tunic in the portion of the artery nearer to the syringe than the site of the detached flaps."

This then is the mode in which nature prevents hemorrhage from large arteries when they are torn across by violence. The external coat is elongated into the form of a conical cap over the open mouth formed by the division of the inner and middle coats; above this opening, the inner and middle coats are partially lacerated in various places, detached by the impulse of the blood from the outer coat, and consequently made to fill up and obstruct the cavity of the vessel like so many valves; clots are effused within the cone formed by the outer coat over the aperture in the inner ones, and the lacerations and flaps of the inner coats higher up form points of adhesion for a firm coagulum within the canal of the artery, extending sometimes several inches upwards. The effect of the impulse of the blood in detaching the inner coats from the outer wherever there is a partial laceration of the former, is shown by the artery being sensibly dilated at the points from which the inner coats have been stripped down. In illustration of these facts, Mr Turner has related various cases; for the particulars of which, however, we must refer to his paper.

But it is not only when the great arteries are torn open that they are liable to become obstructed in the manner described above. Dr Thomson some time ago conjectured with much plausibility, that the failure of the circulation sometimes observed in a limb after a ball has passed near the trunk of the supplying artery without dividing it, is owing to the inner coats being lacerated and coiled downwards, so as to obstruct the passage of the blood till an internal clot is formed. Several cases are now related by Mr Turner, which will prove still farther that the same process may be called forth by violence applied over a diffused space, and not specially to the artery,—that the degree of violence required to occasion this may sometimes be exceedingly slight,—nay, that a diseased state of the inner coats may arise, in consequence of which they are lacerated and cause obstruction spontaneously, or without the co-operation of outward force at all.

Of these cases, thirteen in number, several are nothing more than heads of cases which have been reported by previous authors, and which, although their nature was not ascertained at the time, Mr Turner with good reason conceives to have been examples of the disease that forms the subject of his paper. He also adds five unpublished * cases which have fallen under his own notice, or that of his friends; and in three the nature of the disease was clearly ascertained by dissection.

In two of the five only was there any material violence applied to the part where the obstruction took place; in the other three the disease may fairly be said to have arisen spontaneously; for the obstruction succeeded some trifling ordinary movement of the affected extremity, such as turning the hand behind the back, or leaning backwards on the arms in the act of rising from bed. In one of the two former, the disease may likewise be said to have been spontaneous; because, although it occurred in one artery subsequently to an injury, it afterwards affected another without the operation of any such cause.

In the three spontaneous cases, the local symptoms were preceded for a longer or shorter period by general fever, not always well-marked, accompanied in one instance with anomalous shifting pains, and in two instances with a tendency to diarrhœa or dysentery. But it does not appear by any means certain that this preliminary affection was necessarily connected with the local disorder which ensued.

The supervening of the local affection was commonly de-

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* One had been previously given in abstract by himself to Mr Hodgson, and published by that gentleman in his treatise on the Diseases of Arteries and Veins; and a similar account of another will be seen in Vol. xxii. of this Journal.

noted by a sensation as if something had given way in the part, or by sudden acute pain; but sometimes the patient's attention was not directed to the part by any uneasiness whatever, till the surgeon discovered it by a slight tenderness on pressure, corresponding with the point at which the pulsation of the artery ceased. In none of the spontaneous cases was there any swelling or redness in the seat of pain,—in one instance only some hardness. The pulsation of the arteries below the affected part ceased entirely; above it the pulse was in general preternaturally strong. A sense of numbness in the limb below the seat of the disorder was universally present, accompanied often with paleness, coldness, and tingling; and the veins were unnaturally flaccid, and when emptied by pressure, filled again slowly. The power of motion and sense of touch sometimes continued perfect; sometimes both were somewhat impaired; in a few of the cases quoted from previous authors, and which Mr Turner presumes were analogous to his, sensation and motion were both almost completely destroyed. In a few cases the pulse beyond the seat of the disease slowly returned, but in most of these only to a very imperfect degree. In two of Mr Turner's patients, gangrene of the limb was caused by the obstruction to the circulation, and the same consequence ensued in two cases quoted by him from Volumes ix. and xix. of this Journal, and considered by him as examples of the disease in question. In two of these four, life was saved by amputation being performed after the appearance of a line of demarcation indicated that the gangrene had ceased to spread. Gangrene has seldom attacked the arm after obstruction of the humeral artery; but when the femoral artery has become obstructed, gangrene has seldom failed to ensue. Mr Turner's essay contains five instances of obstruction of the femoral artery, and in three of these gangrene took place; of obstruction of the humeral artery twelve instances are mentioned, one of which only was succeeded by gangrene.

Of the three inspections after death, that of Case III. throws most light on the nature of the pathological change undergone by the arteries, because the patient did not survive long enough for surrounding inflammation to alter and obscure the primary disorder. Death arose from gangrene of the limb seven days after symptoms of obstruction in the femoral artery. We shall relate the appearances exhibited by the vessel in the author's own words.

"The femoral artery being laid open there was found disease in several places of the inner coats. These were soft and separated at various points from the outer coat, so as to lie across the area of the vessel, like valves. One of them was about a third down the thigh, and there were others less remarkable. On slitting open the external iliac artery, the inner coats were found soft and thick, and at one place completely lacerated in the whole circumference of the artery, and separated from the external coat for nearly an inch and-a-half, the portion thus separated having fallen down and coiled up, so as completely to obstruct the canal of the artery nearly at the place where it passes under Poupart's ligament. Between this and the origin of the internal iliac artery there were considerable lacerations of the inner coats. In two places they were slightly detached from the outer coat, and their edges projected into the tube of the vessel. Above the obstruction of the lower part of the iliac, produced by the more extensive laceration, there was a coagulum of blood in the artery. The aorta was in several places diseased, its internal surface ulcerated, and the inner coat partially separated. In some of the smaller branches of the arteries in the pelvis there was ossification ; but none in the right iliac artery, where this singular disease was situated. The left iliac artery appeared sound." P. 136.

From the other cases, which were of much longer standing, it appears that after a time the artery at the seat of obstruction is found firmly incorporated with the surrounding parts, its parietes adhering together, the inner coats terminating abruptly by a ragged margin at each end of the obliteration, and generally a long, conical, fibrinous clot extends upwards and downwards from the deposition by means of which the adhesion of the parietes is effected.

Little information has been hitherto acquired as to the pathological states of the arterial coats in which this singular disease may originate. In some instances the inner coats in the vicinity of the laceration were healthy. It does not appear that they were affected in any instance with the disease observed in most cases of aneurism.

Mr Turner has necessarily been very brief on the treatment. Little in fact is at present known regarding it. The nature of the preliminary constitutional disorder points out the propriety of antiphlogistic treatment in that stage. Yet, as the author observes, this was actively enforced in two instances without advantage. When the obstruction has fairly been formed, and gangrene is to be apprehended, the temperature of the limb, and the circulation in the connecting lateral branches of the vessel, are to be promoted as after the operation for aneurism. As to the propriety of amputating the limb after gangrene has commenced, and while it is continuing to spread, Mr Turner hesitates to give his opinion ; but he appears disposed rather to wait the chance of a limit being spontaneously put to the disease, on the ground that this event has been rather more frequent than recovery from amputation performed while the gangrene continued to advance.

Besides the elaborate Essays of Dr Boggie and Mr Turner, the present volume of Transactions contains on surgical subjects several detached Cases of interest. Dr Ballingall has related an instance of *Crural Hernia*, in which, although the hernia was reducible, there were urgent symptoms of intestinal obstruction, and in which an unsuccessful attempt was made to relieve the patient by laying open the hernial sac, and puncturing the intestine. Dr Huie has described a case of *Enormous Polypous tumour in the Pharynx*, which was successfully removed by ligature from the root of the tongue, and which was remarkable for the length of time it existed and the size it attained, before causing material impediment to the functions of the pharyngeal organs. Dr Knox records a case of *Interstitial Absorption of the neck of the thigh-bone*, occurring in the person of a child two years old, and so complete as to render the head of the bone sessile, and on a level with the trochanter,—a case which militates against the opinion of some pathologists, that this disease arises from the continual pressure and weight of the body. The same gentleman has also described succinctly a singular specimen of *Cartilage in each knee-joint*, causing alteration in the structure of the patellæ, permanent flexion of the joints, and the formation of a secondary patella in the extensor tendon of each thigh. Lastly, Dr Simson has given the particulars of a very rare and interesting case of true *Umbilical Hernia*, in which stricture of the gut was relieved by an operation, and the patient recovered.

On the Practice of Medicine the Society have published three essays and three cases.

The first we shall notice, of which Dr Wilson of Hull is the author, treats of *the Natural or Spontaneous Cure of Syphilis.* Dr Wilson adopts, but with moderation, the non-mercurial treatment of syphilis, and eulogizes our army surgeons for the large share they had in introducing this important change in modern practice. The chief object of his paper is to prove that syphilis is not only not an incurable malady without the administration of mercury, but is even sometimes so easily curable as to disappear from a country which it once infested. Many statements, it is well known, have been made to prove that the natives of Otaheite were afflicted with syphilis at various periods in the last quarter of the past century; and although Dr Wilson himself, with some others, at one time doubted whether any other form of the venereal disease ever existed there except gonorrhœa, he has now satisfied himself that the islanders had really communicated both buboes and chancres to the crews of European vessels. This being established, he proceeds to give the following narrative as evidence of the syphilitic variety of the venereal disease having subsequently disappeared from the island. In 1801 his Majesty's ship Porpoise, of which he was at the time surgeon, visited Otaheite for three months, and the following year she returned for two months more. At first an attempt was made by the commanding officer to use precautionary means, but they were soon found unavailing

"The connexion of our people," continues Dr Wilson, "with the native women immédiately became unlimited, and probably two-thirds of the whole of the young ones, at that time on the island, were at various times on board. During the first month none of the crew contracted any venereal complaint whatever; and in the remaining part of our stay only three of them were affected with gonorrhœa. In our second visit, in the following year, after remaining two months, and one at the neighbouring island of Eimeo, thirty of the crew contracted gonorrhœa, but no other form of the venereal disease appeared among them, nor did any secondary smyptom supervene. Only one case of swelled testis appeared in a person much addicted to inebriety.

"It is certain that in neither of our voyages did our ship import any venereal disease, as the people submitted to a minute inspection ten days before our arrival; but in the interval between our voyages a small vessel had arrived and was wrecked on the island; whose crew, amounting to twenty-one, we found living on shore, and one of whom brought a severe gonorrhœa with him. This sufficiently accounts for the great increase of that infection since our first voyage." P. 68.

"After a careful inquiry, in many excursions through the island, accompanied by a missionary well acquainted with the language, I was satisfied that the inhabitants had never used any remedies except salt water and cocoa-nut-milk occasionally as a purgative, and that the great diminution of the population which had taken place was to be ascribed, not to any infection from Europeans, but to a fever of an intermittent or remittent type, and dysentery, which had been long prevalent and very fatal, and to their own practices, of which I have given some account in the paper alluded to." P. 71.

This appears a very valuable fact in the history of the syphilitic disease. But it is very much to be desired that the particulars of the disease as it prevailed among the crews of vessels in the early period had been more accurately and minutely ascertained.

The next essay is a short account of an *Epidemic Erysipelas which appeared in and around Montrose in* 1822, and prevailed more or less for four years subsequently. The principal object of the author, Dr Gibson, is to advocate the opinion which many have maintained, that erysipelas may sometimes spread by communication from the sick to the healthy. Several striking instances are mentioned of the disease attacking in succession several members of a family, and propagating itself from one family to others in communication with it. But the facts adduced will not warrant more than a presumption in favour of the author's opinion. Similar facts presented themselves to various practitioners in this city about the same period; but none of them appeared to justify more than a suspicion of the disease having been at that time contagious.

The third essay consists of additional cases and observations by Dr Alison, illustrating the opinion stated by him in a former volume of the Society's Transactions regarding the *Origin of Tubercles.* Dr Alison, we believe, was the first who espoused, or at all events gave a substantial form and foundation to the doctrine since adopted by several of the most esteemed pathologists of France,—that tubercles are the consequence of inflammation,—that they are deposited in the pulmonary substance and other textures, just as lymph is deposited in the same parts in other circumstances; and the researches of himself, Andral, Cruveilhier, and others, have tended to show that the principal condition required for the inflammation to have this effect, is that its progress shall be slow or chronic. The present paper contains several new and material facts in support of Dr Alison's views.

The evidence they furnish may be considered as four-fold. *First,* in patients,—previously healthy and free from any affection of the chest, but dying of an acute attack of peripneumony excited by a known and obvious cause,—the tubercular deposit is sometimes not only the chief or sole appearance found on dissection, but also so extensive that we cannot possibly suppose it to have existed previously to the inflammatory attack without causing any symptoms. *Secondly,* in the above circumstances the tubercular matter may occur along with hepatized induration, the ordinary effect of peripneumony, and with effusion of lymph on the adjoining pleura, the ordinary effect of pleurisy; and the tubercular effusion may both appear identical in nature with the lymph or the pleura, and pass by insensible degrees into the exact appearance put on by hepatized lung. *Thirdly,* when tubercles occur along with hepatization in cases of partial or circumscribed peripneumony, the tubercular deposit may be entirely confined to the part of the lung where also the usual and acknowledged effects of inflammation are met with. *Fourthly,* tubercles may be caused even in animals by mechanical irritation of the lungs, as by the introduction of metallic mercury into the windpipe.

Our limits will not permits us to follow Dr Alison through the details of these arguments. The essay in truth is already so concise, and his reasoning so close, that an analysis in moderate compass would not do justice either to the doctrine he upholds or to his manner of illustrating it.

The most novel part of it is towards the conclusion, where he describes some experiments made here by Dr Kay in confirmation of those of Cruveilhier published in 1826, and calculated to show that the injection of running quicksilver into the windpipe of animals excites a species of inflammation which is characterized by there being deposited around the globules a matter exactly resembling the matter of tubercles. The animal chosen was the rabbit, and the quicksilver was introduced by a small opening in the trachea. After the first symptoms of irritation had passed away, the animals continued to labour under hurried breathing, but did not appear to suffer much ; and only one died. Others were killed at various intervals after the mercury was introduced. In that which was killed soonest, namely in eight days, the appearance of clusters of tubercles was more distinct than in any other. " The appearance of several of the clusters," says Dr Alison, " was so exactly that of tubercles in the early stage, that my learned colleague, Dr Monro, and several other friends, gave them that name without hesitation, before they were aware how they were produced ; but on cutting into them, each contained in its centre a minute globule of mercury." The appearances in the rabbit which died were precisely those of tubercles mingled with common hepatization.

" The upper lobe of the left lung was discovered hepatized in the whole of its anterior border, through which were scattered small granular bodies, of a yellowish colour, each containing in its centre an extremely small globule of mercury. They had all the external characters of ordinary tubercles. In the centre of this lobe existed a cavity, containing a soft caseous substance, surrounded by a firm membranous cyst. It was about $2\frac{1}{2}$ lines broad, and three in length. Large globules of mercury escaped from this cavity. In the posterior part of this lobe was an extremely small cyst, containing neither tubercular matter nor a mercurial globule.

" The lower lobe of the left lung was also hepatized in the whole of the anterior border, through which numerous small, granular, and apparently tubercular bodies were deposited, containing each a small globule of quicksilver. . . . . . . In the anterior part of this lung existed a large encysted cavity, filled with a soft, yellowish, granular mass of a caseous consistence, resembling the matter of softened tubercle. The cyst was distinct, apparently well organized, being of firm texture ; and the cavity was capable of containing a large pea. In the lower lobe of this lung tubercular deposition also existed, surrounded by hepatized structure. Several bronchiæ were much dilated, and a similar substance was deposited around their parietes." P. 301.

We shall conclude with the closing paragraph of the essay, containing the general practical inference drawn by Dr Alison from the whole inquiry.

"In the meantime, I think the facts stated in this paper and in the latter part of my former one may be regarded as sufficient evidence of the proposition, that scrofulous tubercles may be, and often are deposited in consequence of inflammatory action; and therefore, that, as on the one hand scrofulous diseases may be in many cases prevented by applying the *tonic regimen* to persons of feeble constitution, but not yet affected with actual disease; so on the other they may also be frequently prevented by the early and prudent use of the *antiphlogistic remedies* in those in whom the slight inflammatory complaints so often preceding them have already appeared. This general conclusion does not differ from that which I believe the greater number of practitioners have been induced to form from their own practical observation. But it seems to me of great importance to have attained to it by pathological inquiries, founded on fatal cases,—because, until the pathological question as to the frequent dependence of tubercles on inflammation is determined, no observations on the effect of antiphlogistic remedies, where tubercular disease is apprehended,—if made on cases that terminate favourably,—can be held to be conclusive on the subject."

Such are the more regular and elaborate papers on subjects in practical medicine and pathology. Of single Cases three have been published,—a case of *Aneurism conjoined with Softening of the Spinal Chord*, by Dr Thomas Molison,—a case of excessive *Contraction of the aortal and mitral valves of the heart*, by Mr Wishart,—and a case of *numerous large Perforations of the skull* arising from the pressure of sarcomatous tumours, by Dr Ballingall. We have already said that detached cases do not appear to us properly recorded in the Transactions of a society. Dr Molison's case, however, is one of extreme interest and curiosity, and well deserves a place in any work. His patient died of aortal aneurism opening into the gullet. Four days before death he lost sensation and the power of motion in the arms, while he retained both in the legs; and on dissection, besides other morbid appearances, it was found that the whole spinal chord corresponding with the fifth, sixth, seventh, and eighth dorsal vertebræ, was softened to the consistence and colour of thick cream, not a single medullary band being discoverable in the softened mass. This appears the most pointed and genuine instance yet brought forward to prove that after complete disorganization of part of the chord, and consequently a breach of continuity, sensation and power of motion may remain in the inferior extremities. We suspect it is in vain for physiologists to follow Andral and deny the accuracy of such facts; though it must be granted that it is no easy matter to see how they can be accounted for.

The *Anatomical papers* are two in number, one by Dr R. Grant, Professor of Zoology in the University of London, on *the anatomy of the Viscera of the Sword-fish*, being the first account yet given of its anatomical structure,—the other by Dr John Davy, *on a new method of Preserving Anatomical Preparations*, namely in liquid sulphurous acid. Neither of these papers will admit of abridgement. That of Dr Davy we must of course recommend particularly to the notice of anatomists and pathological collectors. The advantages which are claimed for the sulphurous acid, besides cheapness, are—that its preservative power is lasting, as satisfactorily appears from some of the soft solids after immersion in it resisting putrefaction even in the air,—that the liquid in the jars never becomes muddy, or throws off any opaque matter upon the glass, as happens with some other antiseptics,—and that it tends more than almost any other antiseptic fluid to preserve the peculiar appearances of the recent soft solids, because, instead of shrivelling, it expands many of them, so as to render their parts more distinct, and because it does not, like alcohol, reduce almost all colours to the same unvarying hue, but (in regard to blood particularly) communicates a tint by which a moderate mass of it may be distinguished at once from the surrounding parts. For rules as to the method of using it under various circumstances we must refer to the paper itself.

The physiological papers, which will in the last place be mentioned, are two in number,—one by Dr J. Davy, on the effects of the sun's rays on the human body; the other by Mr J. W. Turner on the causes of the sounds produced by the action of the heart.

The paper of Mr Turner *On the Causes of the Sounds produced by the Action of the Heart* will be perused with much interest by every stethoscopist and admirer of Laennec, as it appears to us to establish unequivocally an important and fundamental error in the physiology of his auscultation of the heart. Laennec observes, that, with the stethoscope applied over the region of the heart, we first perceive the ear to be slightly raised by an impulse of the heart synchronous with the pulse at the wrist, and accompanied by a distinct, dull sound; that *immediately after* a sharper sound is heard like the shutting of a valve and without any impulse; and that a short period of repose intervenes after the latter impression before the former is renewed. In accounting for these impressions he sets out very correctly with imputing the first to the contraction of the ventricles. But Mr Turner, we think, has succeeded in showing that he is wrong in ascribing the second to the contracting of the auricles. On the one hand, he objects that Harvey, Haller, Lancisi, Magendie, and more recently he himself, always observed the ventricles in animals to contract *immediately after* the auricles,—that the two contractions appear in a manner continuous, or as if the ventricles began to contract before the contraction of the auricles was quite finished,—and that, therefore, the interval of repose really occurs after the ventricular systole, not after the auricular, as is assumed in Laennec's view of the physiology of the heart's action. These facts are matter of positive observation and experiment. On the other hand, in man convincing proof may be had to the same effect, as Mr Turner ingeniously points out, by observing the relation which subsists in point of time between the venous and arterial pulsations in the neck and the two sounds of the heart, as the two pulses in the neck correspond with the auricular and ventricular contractions. Venous pulsation may be seen in the necks of thin large-veined people, though the heart and vessels are healthy. In a case of the kind, in which the two sounds of the heart were both accompanied with an impulse perceptible on applying the hand to the chest, Mr Turner remarked that the venous pulse in the neck *preceded* the first thoracic impulse of the heart; that the venous pulse was *immediately* followed by the arterial pulse and first impulse of the heart which occurred synchronously; and that the second impulse of the heart which followed these immediately was not accompanied by pulsation in the veins of the neck, but preceded it by a sensible interval. Laennec's position then is untenable.

Mr Turner has not attempted to settle the cause of the second sound of the heart as perceived by the stethoscope, and sometimes (contrary to Laennec's statement) even by the hand applied to the chest; but is inclined to ascribe it to the dilatation of the heart effected by its elasticity.

He concludes with some material objections to Dr Barry's theory of the venous circulation; but the length which the present review has already attained prevents us entering on this part of his inquiries.

The only paper remaining for our notice is another by Dr John Davy, *On the Effects of the Sun's Rays on the Human Body*. The author there examines experimentally the process by which the tanning of the skin is effected by exposure to the sun, and endeavours to determine the nature of the change produced, and to discover the purpose which it serves. He has found that when a part of the skin of a European is exposed to the bright sun of the hotter climates for the first time, a slight erythematic inflammation is excited, the old cuticle scales off in large flakes, and a new cuticle appears, which at first is slightly brown, but which after repeated desquamation becomes at length of the usual deep brown tint. An analogous change, it is well known, often follows the inflammation caused by blisters. Yet the tanning effected by light may form without any inflammatory process, as, for example, when the skin is long exposed to bright diffused light, not to the direct rays of the sun. It is not, as physiologists usually imagine, in the cuticle that the colouring process takes place, but on the surface of the true skin,—on which, in fact, a brown colouring matter is deposited. This brown matter, as seen in moles or in the areola of the nipple, is identical in chemical properties with the *pigmentum nigrum* of the eye, and in particular, like it, resists a low red heat without decomposition.

The purpose of the change of colour is to protect the skin from the heating action of the sun's rays. Dr Davy's experiments on this point are in accordance with the inferences formerly drawn from other experimental researches by Sir Everard Home. After the tanning has been once accomplished, fresh exposure may cause slight pain and a barely perceptible increase of temperature, but desquamation does not follow. The protection, however, is not complete; for Dr Davy found even the skin of the Negro suffer somewhat under exposure to bright sunshine, if the part had not been exposed for some time before; and the skin over a dark mole in a fair person became red and desquamated after a few days.

The analysis now concluded will, we should hope, convey a faithful impression of the value of the labours of the Edinburgh Medico-Chirurgical Society, and in doing so, must both justify the favourable opinion we have expressed of the present volume, and convince the profession how well the Society deserves the support and encouragement which it has already received, and which it still requires in order to go on with its Transactions zealously and successfully.

ART. VIII.—1. *A Treatise on the Diseases of the Eye, including the Doctrines and Practice of the most Eminent Modern Surgeons, and particularly those of Professor Beer.* By GEORGE FRICKE, M. D. Ophthalmic Surgeon to the Baltimore General Dispensary. A New Edition, with Notes, By RICHARD WELBANK, Member of the Royal College of Surgeons, and of the Medical and Chirurgical Society of London. With an Engraving. London, 1826. 8vo. Pp. 308.

2. *A Compendium of the Diseases of the Human Eye, contain-*

ing Descriptions and Explanations of the Various Diseases, illustrated by Engravings, and accompanied by Practical Observations on their Treatment. By ALEXANDER WATSON, Fellow of the Royal College of Surgeons, Edinburgh, &c. &c. &c. 2d Edition, much Enlarged. Edinburgh, 1828. 8vo. Pp. 194.

3. *Anatomical Description of the Human Eye.* By ALEXANDER WATSON, Fellow of the Royal College of Surgeons, Edinburgh, &c. &c. &c. Illustrated by a Coloured Plate. Edinburgh, 1828. 4to. Pp. 16.

THE two works now mentioned possess very strong claims on the attention of the student of ophthalmic surgery. Both are succinct and clear expositions of the principal diseases incident to the organ of vision. Both works are strictly didactic, and addressed chiefly to those entering on the study of ophthalmic diseases. And both are the productions of surgeons who have cultivated the subject practically, and who, after very general and accurate acquaintance with the writings of their predecessors and contemporaries in the art, have been solicitous to communicate the results of their own observation and experience chiefly in this department.

The first of the two works is from the pen of an American physician, who, after availing himself of the best sources of information afforded by this country and the Continental schools, more especially that which has acquired so much celebrity at Vienna under the successive names of Wenzel and Beer, has devoted himself very exclusively to the study and treatment of diseases of the eye in his native country. Of the general scope and plan of this manual it may be sufficient commendation to say, that it is formed chiefly on the model of the excellent treatise of the latter eminent oculist, entitled " Lehre von der Augenkrankheiten." The systematic form which this admirable model communicates to the present work, has enabled Dr Fricke not only to embody in a condensed form all the best information of the Austrian surgeon, but to introduce most of the useful points, pathological and therapeutic, contained in the writings of other modern authors.

Nor are these the sole means which have been taken to render this work truly useful to the student. In addition to the well-directed efforts of the learned author, it is due to the merit of Mr Welbank, the editor on this side of the Atlantic, to say,—that, by a series of well selected notes, short, but instructive, he supplies whatever is omitted, and completes whatever is deficient or too superficially treated in the text. The merits of the arrangement will be understood from the following sketch.

The work consists of four parts, in each of which a general division of the diseases of the eye is fully considered in its history, pathology, and treatment. The first on ophthalmia or inflammatory diseases; the second on the diseases which attack the individual textures of the eye; the third on the diseases of the appendages; and the fourth on those of the eyeball.

In part first, Dr Fricke gives a very clear and instructive account of *ophthalmitis*, or general inflammation of the eye; that of the conjunctiva; rheumatic inflammation; the different varieties of iritis; and internal inflammation or that of the choroid and retina, in five several chapters.

The second part, on the diseases, principally organic, affecting the individual textures of the organ, is divided into six chapters, in the following manner, and with the following subdivisions. The first treats of diseases of the conjunctiva, under the two heads of *pterygium*, and tumours or excrescences; (*lipoma.*) The second, on diseases of the cornea, comprehending A opacities and specks; B ulcers; C staphyloma; and D conical deformity or pellucid staphyloma. In the third chapter are considered the diseases of the iris under the heads of A *mydriasis* or permanent dilatation; B *myosis* or destruction of the pupil; C synechia or morbid attachment to the cornea or the capsule of the lens; D prolapsus; and E artificial pupil. In the fourth chapter, on diseases of the retina, the consideration of the varieties, causes, and cure of amaurosis is introduced. The fifth, on diseases of the crystalline lens and capsule, treats of the varieties of cataract, and investigates the merits of the different modes of operation. In the sixth, on diseases of the vitreous and aqueous humours, the author treats of *glaucoma*, dissolution of the vitreous humour, and dropsy of the eye; (*hydrophthalmia.*)

The third part consists of two chapters only. The first devoted to the diseases of the eyelids; the second to those of the lacrymal apparatus, the gland, sac, duct, and caruncle. Both are full and minute in their details. In the former are the subjects of inflammation of the eyelids, erysipelatous inflammation of the inner angle, (*anchylops*) psorophthalmy, stye, granular conjunctiva, *trichiasis*, *distichiasis*, eversion, palsy, prolapse, and cramp of the eyelids, morbid concretion, and encysted tumours. In the latter we find inflammation, scirrhus and hydatid of the lacrymal gland, epiphora, inflammation, scrofula, relaxation, and dropsy of the sac, and inflammation and scirrhus of the lacrymal caruncle.

In the fourth part, which is devoted to the consideration of the diseases and organic changes affecting the eyeball, Dr Fricke treats of hæmatoid fungus and cancer of the eye; the three varieties of deranged vision, viz. squinting, near sight, and distant sight; atrophy, varicose enlargement, and protrusion of the ball.

The difficulty of making a good and useful classification of the diseases affecting the organ of vision, either generally or in its integrant parts, has been admitted by most ophthalmologists. The above, which indeed is chiefly that given by Professor Beer, and the adoption of which is a proof of the good sense of the present author, possesses the rare and substantial merit of being at once distinct, and very well adapted for the purpose of arranging and communicating information. It is easy to see that he takes care not to confound disorders which, though similar, ought to be distinguished both in theory and practice. Nor are his divisions unnecessarily multiplied, or his distinctions too fine and minute. In short, Dr Fricke avoids equally the extreme of generalization and minute subdivision. This is well exemplified in his account of the several varieties of ophthalmic inflammation.

The descriptive parts of the treatise are clear, accurate, and evidently derived from observation. Without being so short as to leave the reader in the dark, they are not so diffuse as to render them unfit for the work in which they are given. In some instances, perhaps, the author is less precise in giving the anatomical and pathological characters of the disease of which he treats. This we imagine may originate in the circumstance, that most eye-diseases being conspicuous, and objects of sensible observation, furnish their anatomical characters immediately, and thus admit of no other description than the enumeration of these characters. Examples of this oversight we remark in *myosis*, or *phthisis pupillæ*, and *glaucoma*, neither of which are defined with anatomical precision. These slips, however, are rare; and their rarity is the circumstance which invests them with any importance.

In the practical, or what may be more justly termed the therapeutical parts of the work, the author appears to great advantage. Desirous to regulate the treatment on fixed and rational principles, without attempting to enumerate all the remedies and modes of management which have been at any time in use among surgeons, ancient and modern, regular and irregular, he proceeds at once to show the practitioner the object which he must hold in view, to specify the means by which this is to be effected, and to define the conditions which indicate or contra-indicate the employment of each.

As another recommendation of this work, the style is simple, plain, and perspicuous, precisely what is required in a didactic treatise. It is remarkably free from that ambitious and affected phraseology, that singular application of old terms, and that fondness for those of new fabrication for which many writers in the United States are so much distinguished. Unless, indeed, the author had avowed himself to be an American, his treatise might have passed for that of a well educated English surgeon.

Of the notes we have already spoken shortly. In addition to their legitimate purpose of supplying deficiencies, they furnish many useful illustrations both of the pathology and of the treatment of ophthalmic diseases. Upon the whole, this treatise is entitled to the character of a useful synoptical view of the diseases of the organ of vision.

With a similar object, the work of Mr Watson presents a resemblance in general character, and differs only in the subordinate features. Though the arrangement is simpler and perhaps less scientific, it is still very complete, and exhibits a systematic and comprehensive view of the diseases incident to the human eye.

Confining his views closely to the eye and its constituent parts, without diverting the attention to its appendages, Mr Watson distributes his work into eleven chapters on the morbid states and changes of the organ of vision only.

The first chapter, on ophthalmia, consists of five sections, on inflammation of the eye in general, and on the history and treatment of ophthalmic inflammation in their acute and chronic forms.

In the second chapter, on the diseases of the *conjunctiva*, the following subjects are discussed in six sections;—acute inflammation of the conjunctiva and its treatment, chronic inflammation and its treatment, sloughing of the conjunctiva, *pterygium*, morbid growth and cancer of that membrane.

The third chapter, on diseases of the cornea, comprehends the following subjects in five sections;—the nature and treatment of acute inflammation of the proper cornea, phenomena and treatment of ulceration of the cornea, simple and complicated, with prolapse of the iris, specks and chronic opacities unaccompanied with inflammation, and lastly, conical cornea, hydrophthalmy, and staphyloma.

The two sections of the fourth chapter are devoted to the subjects of acute inflammation and staphyloma of the sclerotic coat.

Of the fifth chapter, the first section is devoted to the history and treatment of inflammation of the choroid coat, iris, and membrane of the aqueous humour; the second and third to the nature and treatment of acute iritic inflammation; and the fourth to those of the chronic form of disease.

The sixth chapter contains the history of the phenomena and treatment of inflammation of the retina, acute and chronic, and of amaurosis. In the seventh the author considers the effects of inflammation on the lens, describes the various forms of cataract, and examines the different operations for its removal.

In the eighth he considers the morbid states incident to the vitreous humour; in the ninth he describes the conditions requiring artificial pupil, and details the principal and most approved modes of performing that operation; in the tenth he takes a short view of the effects of injuries mechanical and chemical; and the eleventh contains some short but useful remarks on hæmatoid fungus and cancer of the eyeball.

In many respects this arrangement coincides much with that of Dr Fricke; and though less elaborate in its divisions, it tends nearly in the same degree to communicate a clear idea of the different morbid states of the organ of vision, and of the mutual relation by which they are connected.

The descriptions of Mr Watson are short, but very clear and distinct; and as they are manifestly derived chiefly, if not entirely, from personal experience, they show a talent for observation and pathological acuteness by no means common.

To render these descriptions still more intelligible, Mr Watson has published ten very neat and accurate engravings, containing representations of all the chief varieties of ophthalmic disease, coloured after life. Though we are by no means partial to the fashion of increasing the expence of elementary works for students by the addition of costly engravings, we have no objection to the introduction of a few useful figures, which must really enhance the value and augment the utility of a work like the present. The history and phenomena of diseases of the eye, like those of the skin, may be very aptly illustrated by good delineations; and, as we well know that Mr Watson has cultivated this department of pathology with peculiar assiduity, and renders his talent for observation more valuable by the powers of his pencil, those with which the present work are embellished may be recommended to the student with every hope of being highly useful. Though a few of the figures are copies, a large proportion are drawn with much fidelity from cases seen or treated by the author. The colouring is in general accurate and natural.

Of the nature and general merits of the two works now before us, we have attempted to communicate some idea in the foregoing account. To enter into minute examination of their contents is neither necessary nor expedient. Both are, we conceive, well calculated for the class of readers for whom they are composed; and both will be highly useful in diffusing correct information on ophthalmic surgery among all ranks of the profession.

The anatomical description of the eye, which is also illustrated by figures, is a useful guide to students in obtaining a distinct understanding of the relative position of the constituent parts of the organ. The descriptive details, though short, are clear, and contain all that the student requires to bear in mind, either for the purpose of understanding the progress of disease, or performing operations requisite for its removal. The diagram of the vertical section is copied and explained from Soemmering; and it is a service not altogether useless, that Mr Watson has rendered the engraving of this anatomist generally accessible, and has provided the student with means of studying the anatomy and the diseases of the organ of vision at a moderate rate.

Art. IX.—*A Dictionary of Medicine, designed for Popular Use, containing an Account of Diseases and their Treatment, including those most frequent in Warm Climates; with directions for administering the various Substances used as Medicines; the regulation of Diet and Regimen; and the management of the Diseases of Women and Children.* By Alexander Macaulay, M. D. Fellow of the Royal College of Surgeons of Edinburgh, and Physician Accoucheur to the New Town Dispensary. Edinburgh and London, 1828.

THAT physicians are averse to the dissemination of medical knowledge in a popular form, and among unprofessional persons, is an opinion very generally received, and not altogether without justice. Nor are we ashamed to acknowledge that we belong to the class of persons who labour under this unhappy prejudice, and to say that we have more than once had occasion to witness the absurd, if not the pernicious, effects which result from well intentioned, but imprudent attemps to adapt medical knowledge to the capacities and attainments of general readers. Of a science deriving its materials from so many different sources, some of no easy attainment, as that of medicine, it is not reasonable to expect, that the principles or the practice should admit of ready reduction to the level of popular information. Knowledge of mere results without their principles is ever apt to degenerate into empiricism.

Notwithstanding these rational and well-founded objections, it may become a fair subject of speculation, whether a certain degree and kind of medical information may not with safety be diffused among the general mass, if not of readers, at least of those who consult books. In the present day, when all methods are taken to bring science from schools and academies to the haunts of mankind, and to diffuse its blessings or its evils among the world at large, none, if general interest and utility be of any weight, could more properly be presented in a popular form than the art of healing.

As one in which the feelings of all are more or less concerned, and of many very deeply, it affords as legitimate a subject, it may be argued, for popular exposition as any which has yet been distinguished by this mark of attention. That there is truth in this may be certainly concluded from the avidity with which Domestic Medicines, Medical Guides, and similar performances are read by all ranks and orders of society. Even the number of general readers who derive amusement, if not information from medical articles, in Encyclopædias, Dictionaries, &c. is much greater than is generally imagined. In short, so great is the curiosity of the public on this subject, that, however pernicious be its effect, medical works, if in the least intelligible, will be read or consulted to a greater or less extent.

Under such circumstances, it is a matter of prudence, if not necessity, to supply this appetite for information with proper materials. It is manifest, that the ordinary works read by students are unfit for readers not initiated into the elementary branches of medical science. It is not less obvious, that the works which have been hitherto put into the hands of the uninitiated, were, to speak in the most gentle terms, calculated to produce several of the very evils which should be most sedulously avoided. To expect that such works should impart the power of distinguishing similar diseases is perhaps too much. Not only this, however, but the more serious evil of extreme confidence in remedies often inert, and frequent misapplication of those endowed with active virtues, trifling with disorders which require prompt and energetic measures, and mismanagement of diet and regimen, are a few only of the abuses which perusal of such works has entailed.

To counteract the progressive increase of these evils, nothing seems better adapted than the plan of communicating correct and rational views of the causes, history, and distinctive phenomena of diseases and their best mode of treatment, in plain and intelligible language. To demonstrate, as far as is known, shortly and clearly, the nature of the varied and multiplied forms of disordered health is indispensable, in order to convince the public at large of the difficulty of distinguishing diseases. To show the real effects of remedies is also requisite in order to prevent superstitious, inert, and empirical practices. And it is not less indispensable, with a view both to preserve health, and to restore it when impaired, to explain the great influence of diet, regimen, and other accessary agents.

To accomplish these objects, the work before us is eminently well adapted. Digested in the most commodious form both for reference and perusal, written in a style neat, plain, and perspicuous, and containing, upon the whole, much useful and accurate information on the nature, causes, and treatment of diseases, it is calculated to accomplish all that could be wished in a popular system of medicine. In some instances, perhaps, the information may be a little too scientific, and too technical for those who are likely to consult a work of this description. But to this it may be answered, that it is next to impossible to divest a difficult and complicated art of all scientific appearance; and what may seem technical to one may not be so to all.

The descriptive parts of the work, which are delivered in a simple, and rather elegant manner, are calculated to interest, so far as medical reading can interest, unprofessional persons. One obvious advantage they possess, that of showing the difficulty of recognizing the peculiar nature of any given disease, and proving that to name a disorder is a task not so easy as is imagined. Of his observations on treatment and remedies, one great use is to prove the danger of domestic practice, and the evil of trifling with disease on the one hand, and on the other, of tampering with remedies, the nature of which is unknown. A valuable part of the work is the explanation of the composition and effects of secret remedies, showing at once what inert or injurious agents are often given to cure formidable diseases, and that those which are really serviceable, are simply the remedies employed by rational physicians and surgeons.

The observations on climate, diet, regimen, and the management of infants are interesting and judicious. They comprise all the best established information on the subject, and, like several parts of the work, may be perused even by professional readers with advantage. To parents and those who have the superintendence of children this work must be a useful guide—more useful by showing the difficulties than by giving false views of the facilities of managing the health of their young charges. In all respects, indeed, the Dictionary of Dr Macaulay is calculated to gratify rational curiosity, to enlighten the minds of the public in general on medical subjects, and to diffuse correct notions on many topics which are too often disguised in technicalities, or debased by superstition. It is, above all, an excellent antidote to every species of quackery and empiricism.

PART III.

MEDICAL INTELLIGENCE.

SURGERY.

On the Employment of Cotton in the Treatment of Burns. (*Glasgow Medical Journal*, *May* 1828.)—Raw cotton, or cotton wool, has been for some time a popular remedy for burns, but it has not been much used by professional men, and although we are aware that some surgeons employ it extensively, indiscriminately, and, as they have assured us, invariably with good effects, Dr Anderson of the Glasgow Infirmary is the first person in this country who has subjected it fully to public trial, and brought it under the notice of his brethren in a methodical and satisfactory way. He appears to use it in every form of burn, and at every stage of its progress.

The most striking feature in its effects in all instances,—whether of recent superficial burn causing vesication, or of recent deep disorganization of the true skin and cellular tissue, or of superficial inflammation and suppuration succeeding a superficial injury, or of deep sloughing,—is to allay pain and irritation of every sort rapidly and altogether. Several of Dr Anderson's patients who had been treated for former burns, according to various old methods, assured him they had never experienced such relief from pain before. It is remarkable, indeed, that even in those hopeless cases in which the integuments have been extensively and deeply destroyed, and in which death must almost inevitably ensue, the application of the cotton is speedily followed by marked relief, nay, by the total and permanent departure of suffering. In consequence of this allaying of irritation, the pulse comes down, the heat of the body diminishes, the anxiety ceases, sleep is restored, and the appetite returns.

By thus checking the inflammatory action in those cases in which the surface only of the true skin is injured, the cotton always greatly accelerates the cure, and will often complete it without leaving any material cicatrix or scar; whereas in all the common modes of treatment, the inflammatory action being allowed to go on, the deeper layers of the true skin, though not primarily injured, ulcerate or slough away, and in consequence the sore cannot heal without leaving an ugly scar. This is one of the chief excellencies of the new mode. The cotton forms with the discharges a substitute for the epidermis, under protection of which the process for the formation of the new cuticle takes place undisturbed by external irritations. Thus, in the case of a collier who had the hands, a portion of both arms and both legs, as well as the face, severely scorched by an explosion of fire-damp, the cotton was applied to all the injured parts and left untouched for fourteen or fifteen days. On then removing the mould or mask which the matted cotton and discharges had formed, it was seen that many inches of the circumference of the sores were healed, and that the central parts of the sores were on a level with the surrounding integuments, and were not granulations, but simply " the papillæ of the true skin denuded of the cuticle, inflamed and enlarged so as to present a granular appearance." The sores were almost entirely cicatrized in four weeks, a few points only remaining open for some time longer; and instead of any scars being left behind, the only change ultimately observed was that the skin appeared redder than natural, and that the patient, previously marked with the small-pox, had got quit of the deformity. " In such a case as this," continues Dr Anderson, " under the usual treatment by frequent removal of the dressings, of whatever kind they may be, the parts must have become open granulating sores, of difficult and tedious cure, which would have left scars destroying the motions of the fingers, disfiguring the face, and probably producing *ectropium* in one or both eyes." Dr Anderson has farther had a good opportunity of witnessing the relative effects of the cotton, and of the common treatment with the *linimentum calcis*, by trying each in the case of a girl who had both legs similarly and severely burnt. The leg which was dressed with cotton gave her little uneasiness, and on the cotton being removed for the first time at the close of the third week, a new and sound skin presented itself. On the contrary, the other leg continued long inflamed and acutely painful; and although the sores were treated with a variety of applications according to their state, there were several troublesome ulcers remaining at the end of two months, and they did not heal entirely for a month more.

When the injury caused immediately by the burn is so severe and deep as to have killed or disorganized the whole thickness of the true skin, and when consequently a slough must be thrown off, it is well known that the process of separation is usually very tedious, the cicatrix contracted and injurious to the movements of the joints and the circulation of the blood, and that very frequently the constitution sinks under the violence of the inflammation or the profuseness of the ensuing discharge. All these evils, according to Dr Anderson, are greatly mitigated by the use of the cotton. A very striking case in point, namely, the 8th, well deserves to be here related in detail. A carter 23 years of age, was severely scorched by his clothes catching fire. Almost the whole back below the level of the lower edge of the scapulæ, and a great part of the right side were dry, hard, and brown like leather, and the surrounding skin was red and vesicated. Round the right leg was a band of similarly disorganized integument three inches in breadth; and almost the whole left thigh and left elbow were in the same state. Three days after the accident he came under Dr Anderson's care in the Glasgow Infirmary. Cotton was applied over the whole injured parts, after they had been anointed with oil of turpentine. The pain was soon much alleviated. On the fifth and seventh days after admission, portions of soaked cotton were removed without, however, exposing the surface. On the 8th day the left thigh was examined, and presented a healthy sore with little of the slough remaining; and the patient continued free of pain and constitutional disturbance. The cotton was reapplied, and on the 12th day all the sloughs had separated, except from the back, and healthy sores had formed in their place. On the 14th day the cotton was for the first time removed from the back, so as to expose the surface, which was found healthy and level with the surrounding healthy skin, except at one point where a deep slough was still attached. This, however, was separating rapidly, and on the 22d day it came away. The patient slept always comfortably from the very day of his admission. Exuberant granulations subsequently rose up; but they were kept down by pressure with sheet-lead and pads, and the use of cotton steeped in stimulant lotions, and then well dried and carded. "These applications were removed about once a week, and at every examination there was found to be a gradual formation of new skin, which, instead of being hard, contracted, and elevated, was soft, smooth, and level." At the end of three months, a few inches of surface only remained open. Dr Anderson observes upon this case, that he had never seen so bad a one recover under any other plan of treatment; that it was the general opinion of those who saw the man that he could not recover, and that he doubts whether a similar case of cure could be produced. "I am quite satisfied at least," continues he, "that no one can be pointed out in which the treatment was so easy, both for the surgeon and the patient; and where there was neither the loss of a single night's sleep, nor the occurrence of a single symptom requiring the prescription of more than a simple laxative medicine."

Dr Anderson seems to consider, that, in consequence of the tendency of the treatment with cotton to bring about the filling up of breaches of substance, and the formation of a soft, extensile cuticle, recovery from deep burns when effected by means of this remedy, will not be so apt to be attended with contraction of the joints, or with obstruction to the passage of the sweat and insensible perspiration,—both of which consequences, and particularly the former, have been often remarked after recovery by the old plans.

He concludes his paper with some directions for preparing and applying the cotton, and for aiding its operation by collateral treatment. The cotton, he remarks, ought to be finely carded in narrow fleeces, thin enough to be translucent. If the burn chiefly consists of vesications, the serum is to be let out, and the parts washed with tepid water. If the skin is more deeply scorched, a spirituous or turpentine lotion is better. The cotton is then applied in successive layers, till the injured parts are completely protected from the effects of motion and pressure; and a bandage may sometimes be necessary to retain it. When the discharge from any part is so great as to soak through the cotton, or when it has become insupportably offensive, as sometimes happens in summer weather, layers of the cotton should be removed as far as can be done without exposing the injured surface, and fresh layers are to be applied in their place. But it is very desirable to keep the whole body for many days in a state of complete repose, and therefore the first dressings should be allowed to remain undisturbed as long as possible, notwithstanding the importunate complaints often uttered the patient against the offensive smell of the discharges. Charpie, wadding, and patent or Liverpool lint will answer every purpose fulfilled by the cotton. Dr Anderson prefers the cotton or wadding in the first instance, and the charpie or lint for granulating sores that require pressure.

The surgical profession is much indebted to the author for having given this remedy so fair and ample a trial, and we doubt not will rejoice to find from future experience, that his commendation of it is not exaggerated. We should add, what, indeed, is probably known well enough, that it was first brought forward as a *professional* remedy in the United States. Dr Anderson adds, that he has been informed it is a favourite cure for burns in Greece.

MEDICINE AND PATHOLGGY.

Symptomatic Diabetes Mellitus.—(Osann's 12ter Jahresbericht des Poliklinischen Institutes zu Berlin, p. 23.) It is an important fact in the pathology of this mysterious disease, that when the system is gradually sinking under phthisis, one of its commonest terminations, or when life is cut short more abruptly by some other supervening disorder, the morbid secretion sometimes returns to its healthy state,—a proof that the elaboration of saccharine matter in the kidney is not owing to an organic change in structure, but simply to derangement of function. A new and singular fact of the same nature has been detailed by Dr Bennewitz in Osann's Clinical Report for 1823-4-5; namely, the occurrence of diabetes mellitus in conjunction with pregnancy. The case is in many respects interesting. A stout young woman who previously had three children, and always carried her child to the full time without any material disturbance of her health, became pregnant for the fourth time. During the whole of that pregnancy she was tormented with insatiable thirst, and profuse discharge of urine; but as she had no other complaint of sufficient moment to attract her attention, she did not apply for advice; and the nature of the urine was never ascertained, as the quantity of liquid she drank was naturally thought to be a satisfactory explanation of the increased quantity of liquid discharged. The thirst and diuresis ceased suddenly soon after she was delivered, and she recovered perfectly. At the age of twenty-two she became pregnant for the fifth time; and hardly had the pregnancy begun when the thirst and diuresis reappeared even in a more tormenting degree than before; no other symptom of ill health, however, accompanied them, so that it was not till the seventh month that she applied for medical advice, and even then thirst was her chief complaint. The desire for drink, caused by a burning and itching sensation in the throat, was such that she drank daily five or six Berlin quarts; but her hunger was not preternatural. Her digestion at the same time was vigorous; and although she said she had been much stronger at the commencement of her pregnancy, she was still a stout-looking woman. The urine considerably exceeded in quantity the liquid drank, amounting in fact to eighteen medicinal pounds; it was watery and muddy; had a faint smell like stale beer; and had a taste resembling that of beer, but much sweeter. The tongue was clean and dark-red; the mouth constantly dry; the gums shining, red, and retracted, so that the teeth were loose; the voice weak and hoarse; the bowels regular; her sleep disturbed by calls to drink; the skin rough, harsh, dry, never perspirable; the pulse full, hard, and frequent; the temperature of the body irregular;—and menstruation had continued during the whole period of her pregnancy. Latterly she had also pains in the loins, shooting towards the pubis, and particularly troublesome when she walked. No symptom whatever could be detected of a local affection of the kidneys. On account of the state of the pulse twelve ounces of blood were taken from a vein; but no change whatever was caused in the symptoms. The blood drawn formed an abundant dark-red crassamentum without sizyness, and a clear serum of a peculiar faintly-sweetish smell and taste. A strict animal diet and warm clothing were then enjoined, together with the occasional use of magnesia and hyoscyamus to keep the bowels moderately open; but although she in consequence seemed to feel more comfortable, the state of the urinary secretion remained unaltered. About this time it was analyzed by *Hermbstaedt*, and found to contain *two ounces of saccharine matter per pound* (*civil-pfund.*) At length the labour-pains commenced prematurely, (the precise time not mentioned,) and she was delivered of a female infant weighing twelve pounds, and which died in the passages. Next day she was attacked with great weakness, tearing pain in the lower belly, so acute that she could not bear the pressure of the bed-clothes, delirium, flushing of the countenance; but as the lochia continued to flow naturally, she was not subjected to any particular treatment. Next day, however, the same symptoms continuing, leeches were applied to the abdomen, and a laxative administered. The operation of the latter was followed by profuse perspiration, the first she had had since her pregnancy began. The inflammatory symptoms then rapidly disappeared: at the same time the thirst, diuresis, and saccharine taste of the urine became less and less, and she was soon restored to perfect health. The urine was carefully analyzed again by Hermbstaedt, (at what distance of time after delivery is not stated;) and he could not detect in it any trace of sugar. Six months after being dismissed cured, she became pregnant a sixth time. The relater did not see her during this pregnancy; but he was subsequently informed by her that she had the same thirst, heat in the throat, and diuresis, though in a much less degree than formerly; and that in addition she had a profuse *fluor albus*, which no treatment could check during her pregnancy, but which ceased of its own accord soon after delivery.

Case of extensive internal Exostosis of the Skull, and Abscess of the Brain, destroying great part of both anterior lobes, with an account of the previous mental state of the patient. (*In a letter to one of the Editors from Mr James Syme.*)

MY DEAR SIR,—In compliance with your request, I now give some account of the skull which seems to you so remarkable.

Some time in the early part of last year, I was asked to see a tumour on the forehead of a female about 50 years old. It was about the size of a large egg, and occupied the right supra-orbital region; it also appeared to descend between the eyes, as they were much more widely separated than usual. The right nostril too seemed to be occupied by it. The consistence of the tumour was, generally speaking, extremely firm, like that of bone; but at some parts there was a distinct though very limited fluctuation. As she complained of severe headachs, and was becoming more and more subject to epileptic fits, I concluded that the termination of her sufferings could not be far distant, and requested her medical attendant, Dr Sibbald, to advertise me of the *post mortem* examination if he should obtain one. The dissection took place about six months ago. I unfortunately was not able to attend, but the gentlemen present succeeded in removing all the morbid parts, and Dr Sibbald was kind enough to place them in my museum.

The parts in question were removed by making a vertical section with the saw, commencing a little below the coronal suture, and terminating immediately behind the *sella Turcica*.

This section happened to be just far enough forward to open an abscess about the size of an egg, which occupied the right anterior lobe, and pressed the falciform process to the left side. The parietes of this abscess I ascertained to be osseous; and then examining the brain which surrounded it, especially that of the left lobe, I was much surprised to find that I could almost nowhere push the knife into its substance more than one-fourth of an inch, so that I found nearly all the hollow, which ought to contain the anterior lobes, occupied either by the abscess or by bone. The external tumour was found to consist of osseous spiculæ radiating from the frontal, nasal, and orbital bones, and inclosing a mixture of gelatinous with fibrous matter.

The preparation being macerated, showed more distinctly the extent of the exostosis, especially the internal portion of it; and I then discovered, very much to my surprise, that both optic canals were nearly obliterated; the right one almost completely so, and the left contracted to about a third of its width.

In order to show what changes of faculty accompanied the disorganization just described, I subjoin a letter from Dr Sibbald, and extracts of another from Mr Wight, advocate, who was at much trouble in obtaining information from the friends of the deceased; the portion omitted is that which Mr Wight obtained from Dr Sibbald.

To James Syme, Esq.—Dear Sir,—I have to apologize for not having sooner transmitted to you the particulars of the late M. L.'s illness. I first professionally attended her in September 1826, when she complained of severe headach, attended with prostration of strength and frequent epileptic convulsions. The deformity of the face was not so considerable as at the time of death. There was a tumour of an osseous and cartilaginous consistence, arising apparently within the left orbit, but which had increased very much externally, and covered a very considerable part of the *os frontis*, obscuring and depressing the eye to such an extent as nearly to destroy vision. The patient almost invariably kept her head turned to one side when she spoke or attempted to look at any one. She was exceedingly capricious, and suspected every one to have a design upon her life. Her usual salutation to any medical practitioner was, "I see you want my head, but you shall not have it," followed by a torrent of abuse. I was the only person she would allow to examine her head for a very long period. She complained of no external pain in the tumour itself, which she supposed had been occasioned by a fall she met with about twenty-five years before, or the bite of a rat which attacked her about fifteen years since, and had left a small cicatrix at the insertion of the "*ossa nasi.*" She could bear considerable pressure on it without uneasiness. Her memory was altogether impaired. She frequently imagined the colour of any one's clothes to be different from what they really were, and did not recognize, after a few days' absence, persons with whom she was intimate. But it was remarked that she did not fail to know any one who had excited her passion, which was easily done, or who had injured her; and on recognizing them she would immediately order or drive them out of the house, and would laugh most heartily on being successful. Even her own sister, who was very kind to her, and nursed her, often shared her fury if she ventured even to speak civilly to her. After any excitement of this kind she commonly fell down convulsed, and remained in that state for hours.

She was very much addicted to the abuse of spirituous liquors, which might in some degree account for her very inconsistent conduct. She seemed to have no attachment of a kindly nature, but believed every person to be either a robber or murderer, or wilful fire-raiser. She would sometimes try to make some other person use medicines which were recommended for herself, or would have kept them until the symptoms which required them had abated, for fear of arsenic. Sometimes she burst out into paroxysms of laughter and tears, on hearing of any one dying.

I regret, that, from circumstances having required her removal, I was prevented watching the termination of her illness. The anatomical appearances I have not attempted to describe, the preparation itself being in your possession. There was a very considerable degree of effusion over the whole surface of the brain, as well as in the ventricles, and extending along the spinal cavity.

The patient was found dead in bed, and had not been unusually indisposed for any time previous to her death.

Trusting you will excuse this imperfect account of the facts of her case, I remain, yours, &c. J. R. Sibbald. *Edinburgh, 4th February.*

To James Syme, Esq.—My Dear Sir —According to promise, I send you the substance of all the information I have been able to collect regarding the state of mind of the quondam proprietor of the skull now in your possession, which is likely to become a matter of evidence for or against phrenology. [*Dr Sibbald's information here omitted, being in substance the same as in his own letter.*]

The brother-in-law had known and seen a great deal of her from her youth upwards. Before she became diseased, he says that she was a clever sensible woman, amiable and kind-hearted, with a great flow of animal spirits,—fond of jokes,—orderly and cleanly,—honest, and of good religious principles. He says, that "for the last twelve years she was always silly, sometimes worse than at others." She became gradually worse (mentally) as long as she lived. She became furious, vindictive, and positive. He does not seem to think she would have been competent to have taken care of the shop, unless she had her sister along with her. When in the shop, she used to allege that customers were cheating her, and abuse them accordingly. He was not aware of any want of accuracy in her money transactions; but Dr Sibbald was informed by the sister, that if she sold two pounds of tea, one at six shillings, and another at five shillings, she erred in adding the two together. When she was furious, her fury was directed indiscriminately. She used to conceive she was cheated by every body. She was highly indignant at the idea of any one doing a dishonest action.

When her most intimate friends came to see her, she did not recognize them at first, and seemed to do so afterwards by the voice. If she saw a person one day, she did not recognize him the next.

In looking over the window, she used to make remarks upon passengers, at which she laughed heartily, but she was almost invariably wrong in the remarks she made. She had no inclination to gossip, and took no interest in anecdotes, unless there was something ludicrous, which excited her risibility.

When she went out, she looked bewildered, and her friends considered it more by chance than otherwise, that she found the place she wanted.

She had lost the power of discriminating colours.

She was deficient in recollecting names.

She was religiously mad, and always went to church " when she could crawl." She did not recollect much of what she heard, and what she did recollect she was anxious to communicate, but " could not find words to express herself."

She dreamed much, and believed in the reality of her dreams, which chiefly regarded her friends transgressing the code of morality.

I did not see Mrs T. till late yesterday afternoon, and that only for a short time. She said, in answer to the first question I put to her on the subject, that she considered her a sensible woman. She afterwards confirmed the accounts of her religious madness, and says she used to tell them they were all flying angels, and other absurdities. She also confirmed the truth of her supposing she was cheated by her friends, and of her getting furious if contradicted. She was much addicted to drinking, and the impression on my mind from Mrs T.'s statement was, that she had a naturally sensible mind, although thrown considerably off its balance by the effects of drink. She told me, that after the sister turned ill, she became " quite stupid," which stupidity Mrs T. attributes to the distress of mind caused by the sister's illness.

Some one of the three individuals above-named (which of them I now forget) informed me that she used to complain of her want of memory.

She retained her taste for music.

I think the above is as nearly as I can give the substance of the information I have been able to collect. I have given it as much as possible in the terms in which it was conveyed to me, and have guarded as much as I could against allowing myself to be biassed by preconceived opinions. I am, &c. HENRY WIGHT.

St Vincent Street, 6th March.

I have no doubt that this case will be thought interesting by those who attend to phrenological discussion, and by those who consider the views of Magendie in respect to the nerves of sense worthy of investigation. I am unwilling to draw any inference from it singly, because I think it is wrong to draw general inferences from particular facts; but I put it on record, in the hope that it will be part of the evidence which is some day or other to determine the important physiological questions which concern the function of the nervous system. I remain very truly yours, JAMES SYME.—75 *George Street*, 3*d June* 1828.

On the discharge of Hair with the Urine. [*Nouvelle Bibliothéque Médicale*, *Janvier* 1828.] The following notice of a case of this description lately observed by M. Boyer of Montpellier, has appeared in the Journal quoted. We transcribe it as a counterpart to Mr Mitchell's case, contained in the original part of our present Number. A young woman 24 years of age, was suddenly seized during the course of her second pregnancy with frequent desire to pass urine, which was muddy, purulent, mixed with hairs, and some of the hairs were encrusted with saline concretions. After her delivery, which took place at the ordinary period, she continued for some time to pass hairs. Her husband subsequently pulled out a large quantity of them by means of a blunt brass hook, which he succeeded in introducing into the bladder. This operation, which gave her great relief, was performed in the presence of Delpech. That gentleman suspecting the presence of a calculus in the bladder, made an incision through the superior parietes of the urethra, and actually extracted a small stone, and several masses of hairs. Injections into the bladder brought away still more of them, and another mass being discovered in the bladder with the finger, it was extracted with a pair of forceps. She then appeared to recover; but at the end of a couple of months, the pain and discharge of hairs returned. The bladder was then again explored, and there was withdrawn from it a substance as big as a hen's egg, in which it was easy to recognize a portion of skin covered with hair, and a mass of bone resembling the zygomatic apophysis, and presenting an alveolar process, with a grinding tooth in it. "From these facts it must be inferred, that there was not in this case a true *pilimixtion*, (a phenomenon, the existence of which is questioned by most authors,) but rather the excretion of an ovum imperfectly developed."

On the Nature of Continued Fever, and the changes which the Blood undergoes in the progress of that Disease.—Dr Reid Clanny of Sunderland has published a lecture which he delivered not long ago at the Sunderland Infirmary on the composition of the blood in typhus fever, and on the light which his analytical researches throw on the nature or proximate cause of fever generally. The statement of facts contained therein is much too novel, and. if correct, important likewise, not to deserve all possible publicity. But they are brought forward by the author in a manner far too bare and authoritative, and are in themselves a great deal too extraordinary to allow of us placing much confidence in the results till they are supported by the details of his own experiments, and confirmed by the experience of others.

According to Dr Clanny the watery part of the blood increases in proportion during the progress of continued fever, while the proportion of each of the solid parts diminishes; and when the crisis has taken place the opposite change commences, so that ere long the blood returns to its former condition. Dividing the period of an ordinary case of mild typhus, or (as we should advise him rather to call it) synochus fever into three stages of six days each, the first being the stage of increase, the second that of formation, the third that of declension,—he says he has found from the average of many experimants the following to be the proportions of the chief principles in a thousand parts of blood at the close of each stage.

	In Health.	1st Stage.	2d Stage.	3d Stage.
Water, -	678	729	772	732
Colouring Princ.	160	136	122	130
Albumen, -	121	98	75	101
Fibrin, -	28	25	22	26
Salts, -	13	12	9	11

From this table it appears that all the animal principles, as well as the salts of the blood, decrease materially in quantity as the fever advances, and increase again as it recedes; and the author farther alleges that the same changes do not occur in other febrile disorders.

Another change which he says he has detected is a diminution in the quantity of carbonic acid contained in the blood. In health, blood contains, according to his experiments, a sixteenth of its volume of that gas. In the advanced stage of unfavourable cases of typhus it does not contain any; and in the intermediate periods the proportion is found to decrease gradually, but he does not mention in what ratio.

Dr Clanny infers from these premises that contagious fever is in essence nothing else than a stoppage of the process of sanguification; and he supports this view by some ingenious arguments drawn from the features of the fever itself, and from the phenomena of analogous diseases. We are not quite prepared to pronounce his premises false; but our own observations certainly lead us to suspect as much. With regard to the diminution of the carbonic acid in the blood during the progress of fever, we must recal the author's attention to the late explicit denial by Dr John Davy of the statements of Mr Brande, Dr Scudamore, and others, as to the presence of *any* free carbonic acid in ordinary circumstances. Dr Davy could not find it. We have repeated his experiments with the same result, and believe we have also discovered where Brande, Scudamore, and Dr Clanny found *their* carbonic acid. But even although Dr Clanny's analysis of the blood in fever should prove correct, that is merely a condition necessary to the existence,—and not evidence of the validity,—of his theory of the nature of fever; for in imputing the febrile symptoms to the absence of sanguification, he commits the very error with which he has charged such theorists as Clutterbuck and Broussais; namely, he mistakes the effect for the cause. If inflammation prevails during life in the head or abdominal viscera, and leaves traces of its ravages in the dead body, that is no proof of local inflammation being the cause of the general fever. In like manner, if a starving of the blood occurs during fever, all the functions of assimilation being suspended, that fact certainly is no proof of the starved blood being the cause and not the effect of the disease.

PHYSIOLOGY.

On the powers which move the Blood in the Capillary Circulation. [*Commentationes Soc. Physico-Medicæ Mosquensis, II. ii.* 327.]—In the work now quoted, which we believe is hardly known in this country, are contained some very curious experiments and speculations on the nature of the force which moves the blood in the capillary vessels. As the subject is one of much attraction at present,—when so many theories, all said to be founded on the basis of facts, have been in vain conceived with the expectation of accounting for the phenomena,—we are sure the reader will not regret the opportunity of becoming acquainted with another hypothesis, which certainly has the merit of novelty to recommend it, and which is also deduced, whether legitimately or not we shall not inquire, from facts of extreme interest, of unquestionable accuracy, and, so far as we remember, perfectly new. We are astonished that they have been before the public since 1821, without having been noticed in any scientific journal of Britain, France, or Germany, which we have had an opportunity of consulting.

We shall commence with an account of his experiments, the merit of which ought to be considered quite apart from the use which the discoverer has made of them; and as the work which contains them is very scarce in this country, we shall relate the leading experiments nearly word for word. The original, it should be remarked, is in Latin.

The author, Ferdinand Frederick Reuss, in a preliminary essay on what he calls the *hydragogue*, or aquapellent property of electricity,* has related several experiments to prove the existence of a new property in galvanism, the power, namely, of impelling water from the positive to the negative pole. He appears to have been led accidentally to study the phenomena in question, in consequence of observing the movements in the water of the particles of oxide of copper formed when the positive pole of his battery was made of that metal.

After describing the particulars of this motion, he proceeds to more satisfactory experiments. "This impulse," says he, "towards the negative pole is better seen, when the water is contained between two parallel glass plates three or four lines apart from one another, and when the wires are immersed at right angles to the water, being made of gold or platinum, and covered with glass tubes sealed at their extremities to the wires. It is convenient also to keep the wires steady yet moveable by thrusting them through two pieces of cork which rest on the edge of the vessel. If into the apparatus so prepared common water be poured, and the battery charged, the calcareous matter, which is separated by the decomposition of the salts of lime in the water, and causes turbidity, will not only show by its own movements a continual flow of the water from the positive pole in lines curved downwards, and then bending upwards to the negative pole, but will likewise delineate the course of the current by particles adhering to the surface of the glass plates." * * *

"But the repulsive power of the positive and attracting power of the negative pole is seen much more satisfactorily, if the water in contact with each pole is separated by a stratum of porous matter, so that the particles which are impelled from one towards the other pole may pass through the interstices, while the cohesion of the interposed body may prevent other particles from passing in the opposite direction by their own gravity. Which conditions, in fact, are easily fulfilled by taking a tube of the form of the letter U, filling its curve with sand, and its straight, upright limbs with water. The two wires being now immersed in the water in the two limbs, and the galvanic circle consequently completed, the water will be observed slowly to sink in the positive, and rise in the negative end of the tube. With a voltaic pile composed of ninety-two silver rubles and as many plates of copper, a tube 7½ inches long, and wires made of platinum,—I found that in fifteen or twenty minutes, the water stood ten lines higher than before in the negative, and as much lower than before in the positive end of the tube. On interrupting the galvanic circle, the water soon returned to its original level, and on restoring the continuity of the circle, the transfer recommenced. Next day, fourteen hours after the experiment began, the positive limb was empty, the negative limb was full to overflowing. After observing that it continued thus for four days, I interrupted the galvanic circle again, and the water soon returned to its equilibrium of level."

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* Electricitatis Voltanæ Potestatem Hydragogam tanquam novam vim motricem, a se detectam, denuo proposuit, ejusque in naturæ operibus partes investigare tentavit S. O. Ferd. Fred. Reuss. (Lect. in Conventu d. vi. Oct. 1817.)

"A similar but much more wonderful result was obtained when the interposed substance consisted of clay. I prepared a quadrangular prism of moist potters' clay, ten inches long, and two inches in breadth and thickness. At each end of this prism, and five inches apart from one another, I fixed, half an inch deep in the clay, two glass tubes three inches long, an inch in diameter, and open at both ends. I then poured into each tube an inch of water, and covered each of them (loosely, however, so as to allow a passage to the air,) with a cork, through which the two wires of the battery were passed down to the middle of the water. The pile consisted this time of seventy-four double plates, such as those used in the last experiment. The following phenomena took place. As soon as the electric circle through the wet clay was completed, which was indicated by the escape of air-bubbles from the water, the clay bottom of the positive tube began to swell and raise the sand, with a thin stratum of which I had covered it to keep the water from becoming muddy. In the course of half an hour the clay appeared softened to mud, a part of which pierced through the sand, and projected upwards like a little hill. By and by the pyramid discharged from its apex a muddy liquid, which ran down the sides like lava, and soon formed over the sand a layer of mud three lines in thickness. This beautiful appearance brought forcibly to my recollection the accounts given of the phenomena of mud volcanos. The explanation obviously was, that, when by the impulse of the positive pole the water was thrust towards the negative pole upon the clay at the bottom of the tube, the clay was softened, and the water in subsequently piercing the clay, threw the mud upwards and around it, just as a gimlet does while piercing wood. For half an hour no change was observed in the level of the water in either tube, and the sand and clay remained in the negative tube quite undisturbed. But when three hours had elapsed, the level of the water in the negative tube had risen one line, in twelve hours it had risen two lines and a-half; and in the meantime, the whole water of the positive tube had entered the clay, and the surface of the mud was about two lines lower than the *original situation* of the water. The following night the mud in the positive tube had sunk so far that the wire was not immersed in it; consequently the electric circle was interrupted. Nevertheless I found the level of the water in the negative tube a quarter of a line higher than before, and the clay in the positive tube was firm on its surface. The positive wire being then depressed so as to restore the continuity of the galvanic circle, the clay of that side gradually became firmer and more dry, while the water rose in the negative tube. At length in two days the latter had attained its highest level, namely, 3½ lines above its original surface, while the clay in the positive tube had become so dry as to crack. In two days more the cracks were larger, but the level of the water in the negative tube was not higher, probably because any farther increase it might have received was compensated for by evaporation. That no more than one third of the water which disappeared from the positive appeared in the negative tube,—is to be explained partly by its having evaporated, partly by its having been diffused and retained in passing through the clay between the tubes."

In addition, therefore, to the properties already known to be possessed by the electric current, such as its power of effecting chemical combination and decomposition, of imparting magnetic properties to bodies, of exciting the muscles to contraction, it is also endowed with the power of impelling fluids in a direction from positively to negatively electrified bodies. This power, which Mr Reuss denominates the *Vis Electricitatis Hydragoga*, he resorts to freely for explaining some terrestrial phenomena, such, for example, as the flow of springs from rocks too high for the water to reach by pressure from another source. But, in particular, he has applied it to explain the movement of the blood through the capillary vessels of the circulating system of animals. We believe it is unnecessary to spend any arguments here in showing that all the theories yet devised for that purpose have completely failed. The action of the heart is completely inadequate to maintain the capillary circulation, as is shown very satisfactorily by our author, Mr Reuss, as well as by former physiologists; and with regard to the discoveries of Dr Barry, notwithstanding what has been said in a former number of this Journal, the writer of the present notice will of course be permitted to express his particular opinion, (derived from the objections of Dr Arnott,* those of Mr J. W. Turner, † and certain views and experiments of his own, which it would be foreign to the object before him to detail),—that the force imputed by Dr Barry to the venous suction generally, and to the suction power of the chest during inspiration particularly, has probably been overrated to a great degree by that ingenious experimentalist,—and that the force in question never can account for the passage of the blood through the capillaries.

Mr Reuss's theory of course is, that the arterial system is in a state of positive, and the venous system in a state of negative electricity ; and if he could establish this fact by observation and experiment, and not by hypothesis merely, on which its existence at present depends, there could be no difficulty in allowing that he had pointed out by far the most probable cause, and at all events *one* powerful cause of the capillary movements of the blood. As it stands, it appears to us peculiarly interesting, as adding to the facts and arguments formerly advanced by Wilson Philip, Dutrochet, Prevost, Dumas, and others, a new and important fact in support of the analogy, if not identity, of the nervous with the galvanic principle.

Mr Reuss's paper, containing the experiments already detailed, is followed by another consisting of an elaborate exposition of his theory. The most important part of the second paper is an admirable analytic view of the several powers which contribute or have been supposed to contribute to the movement of the blood in the circulating system generally,—an analysis undertaken by him with the view of showing that the whole of these powers combined cannot account for that part of the circulation which consists in the passage of blood through the capillaries,—and an analysis in which he is amply successful, and would have been too though Dr Barry had made his discoveries before Mr Reuss wrote. The subsequent part of the second paper, containing the arguments with which Mr Reuss endeavours to uphold his theory, is ingenious, but too hypothetical for the physiologists of Western Europe, and for British physiologists in particular.

LEGAL MEDICINE.

On the Vagitus Uterinus. [*Revue Médicale Fevrier* 1828.]—Although many German writers on obstetrics and medical jurisprudence believe firmly that the fœtus may be sometimes heard to cry in the uterus, and the fact is so generally admitted in the German schools, that several medical gentlemen who have visited this country have stated to us that they have themselves heard it, and all laugh at the idea of its being doubted,—the accuracy of the fact nevertheless continues to be questioned both in Britain and in France, more particularly, however, by the French accoucheurs. M. Lesauvage of Caen, well known to toxicologists, as having some years ago settled the question regarding the alleged poisonous properties of pounded glass, has declared his dissent from the general disbelief of his countrymen in the *vagitus uterinus*, and transmits as his reason the following incident to the Parisian Society of Medicine. A bitch fell sick when far advanced in pregnancy. On approaching her, there was heard distinctly, and even at the distance of ten paces, the cries of her pups, whose movements could be also seen through the abdominal parietes. She did not bring forth her young till two days after, " so that the *vagitus* in this case necessarily supposes the spontaneous developement of a gas in the amniotic fluid of each fœtus."

Correspondence on the Qualifications for the Cambridge Degrees in Medicine.

TO THE EDITORS OF THE EDINBURGH MEDICAL AND SURGICAL JOURNAL. —GENTLEMEN,—I request that you will insert in the next number of your Journal the accompanying correspondence between Professor Haviland of Cambridge and myself. By complying with my request you will not only enable me to redeem my pledge, but you will also give publicity to an important and authentic document. I have the honour to remain, Gentlemen, your obedient Servant,

ANDREW DUNCAN JUN.

TO DR DUNCAN JUNIOR.—SIR—I have recently had my attention directed to an article which appeared in the Edinburgh Medical and Surgical Journal, (Vol. xxvii.) avowedly written by you, in which are contained several mistatements respecting the qualifications required of candidates for degrees in this University.

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[*] Elements of Physics.

[†] Edin. Med. Chir. Transactions, iii.

Amongst others I find the following :—" The same title (M. D.) is conferred by the English Universities, not for learning in medicine, but in letters and philosophy. It is there, if we may use the expression, *a false title*." At first I determined on taking no notice of this mistatement ; and had it related to myself personally, I should have remained in that determination. But as it implies a reproach against the University of which I have the honour of being a member, and tends to lower the value of a medical degree taken in that University, and especially as it is put forward by a Professor of another University, and hence is likely to gain credit with persons unacquainted with the real state of the case, some of my friends have thought it incumbent on me to remind you of the error into which you have fallen.

My principal reason for feeling a reluctance in addressing you on the subject has been, that, in the year 1824, I received a letter from your father, Dr Duncan Senior, inquiring into the nature of our examinations for medical degrees, in my answer to which I fully detailed the proceedings for those degrees. I have reason for believing that many persons at Edinburgh were well acquainted with these particulars. I was not without hope that some of those persons might have pointed out to you the injustice of your remarks, or that you might have called to mind the correspondence which had taken place between your father and myself.

I now beg leave to direct your attention to the subject ; and with the persuasion that you will regret the having made an unjust charge, which by a little previous inquiry you may have avoided, I feel confident that you will admit into your next number a contradiction of your former mistatement. This you will best do by inserting my letter to your father, of which, if he has not a copy, I can supply you with one. I have the honour to be, Sir, your obedient and faithful humble servant,

Cambridge, *May* 23, 1828. JOHN HAVILAND,
Regius Professor of Medicine.

Edinburgh, *May* 1828.

To DR HAVILAND.—SIR—I had yesterday the honour of receiving your letter of the 23d as I was setting off for the country, which will account for my not replying by return of post.

The statement which you specify as erroneous in the article on Medical Education, in the Edinburgh Medical and Surgical Journal, avowedly written by me, was made in perfect good faith. I was ignorant that any correspondence had taken place between you and my father on the subject, until informed of it by your letter, otherwise I would certainly have availed myself of so important a document. Although no longer the managing editor of the Journal, I believe I have still influence enough in its concerns to promise the insertion of your letter to my father in the next number, already in the press, provided I get it in time. I regret exceedingly that I must request you to send me a copy of it, not only on account of the trouble to which it will put you, but likewise on account of the reason, which is the extreme bodily debility into which my father has lately fallen, and which renders him incapable of even so slight an exertion as might be necessary to find your letter among his voluminous papers.

Permit me to express my thanks for the polite manner in which you have corrected what has appeared erroneous in my statements ; and be assured that I shall be as anxious to do justice to the eminent seminary to which you belong, as I am ready to repel unfounded attacks upon that of which I have the honour to be a member. I beg leave to subscribe myself your obedient and faithful humble servant,

ANDREW DUNCAN JUN.
Prof. of Mat. Med. University of Edinburgh.

TO DR DUNCAN JUNIOR, *inclosing the following copy of a letter to Dr Andrew Duncan Senior, dated Cambridge, 7th October* 1824.—DEAR SIR.—Your letter requires no apology, especially to one who entertains a grateful recollection of the instruction he formerly received from your clinical lectures.

I will endeavour to answer concisely your questions. The medical students here commonly reside during the three first years after their admission, when they are, in common with the other students, obliged to attend the private lectures, given in the different colleges, on natural and moral philosophy, mathematics, and the classics ; as well as the examinations on the subject of these lectures once or twice in the year. They are also compelled to pass a public examination, on the evidences of Christianity, the Greek Testament, and some classical subjects. This examination takes place after a residence of a year and half.

They are obliged also to attend during their residence (and this is usually done after passing the public examination) a complete course of the lectures of the Professor of Physic, as they are not to be absent a single lecture without a sufficient excuse. They are expected, moreover, to attend, either here or elsewhere, two courses of lectures on anatomy. After the expiration of five years they are entitled to become candidates for the degree of M. B. They apply to the Professor of Physic, who examines them as to their qualifications. They have to translate a passage of Hippocrates, generally some of the Aphorisms; as also of some Latin author, as Celsus. They have written questions given to them from the sciences connected with medicine, as anatomy, physiology, pathology, therapeutics, and pharmacy, to which they are to write answers in English. If this examination (which continues two days) is satisfactory, a day is appointed for the public disputations in the schools, which are carried on in the Latin language. The candidate for the degree is to defend two questions, one selected by himself, and one by the Professor. He first reads a thesis in support of his own questions, and he then answers the arguments brought forward by another candidate, or by the Professor. The business ends by the latter reading the determination. There is also a public examination at the same time. This is termed keeping an act, of which one only can be kept during the day. Should the candidate for the M. B. degree get through these exercises, he is at the next public congregation admitted to the degree. But this confers no right to practise. After two more years he proposes himself for a licence *ad practicandum*; which, after an examination by the professor and another M. D. similar to that I have described, but in addition to which a translation from Aretæus is introduced, if found competent, he obtains.

After three more years, he may become a candidate for the M. D. degree, for which he has no further examination, but must keep (properly speaking) two public acts; one of them, however, is commonly dispensed with. Thus in ten years he becomes M. D.; this is the shortest and most common mode of proceeding to the degree.

I am not sorry thus to have an opportunity of removing an opinion which very unjustly has obtained credit, viz. that at Cambridge we take no pains to ascertain the qualifications of medical students before they obtain their degrees. I am, Dear Sir, your very faithful and obedient servant, J. HAVILAND.

Sir,—The above is I believe almost a verbal copy * of the letter which I wrote to your father nearly four years ago. It affords me great satisfaction to find that you had not been aware that any correspondence had taken place between us; for it has removed from my mind a great part of the reluctance I felt in addressing you on the subject. I, like yourself, am ready to repel unfounded attacks on my "alma mater," so long as they are made in the spirit of candour and truth. In my former letter I alluded only to the observations you made on medical degrees conferred in this university, because this department belongs more especially to myself; but I beg to be understood as by no means admitting the correctness of the statements which refer to the qualifications required of candidates for the degree of B. A., and which you quote from some other writer. I am, Sir, your obedient and faithful humble servant, J. HAVILAND.

I write in great haste amongst other occupations, that I may not lose a post.

Cambridge, May 31, 1828.

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* If any alterations have been made, they have been partly unintentional, from my not having a correct copy. I have altered a word or two to make my meaning more clear.

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Communications have been received from Drs Davy and Burt, and Messrs Threlfall, Syme, Gunn, Dewar.

The following Works have been received :—

Commentaries on the Causes, Forms, Symptoms, and Treatment, Moral and Medical, of Insanity. By George Man Burrows, M. D. &c. &c. London, 1828. 8vo. Pp. 716.

Observations on the Nature and Treatment of Cholera, and on the Pathology of Mucous Membranes. By Alexander Turnbull Christie, M. D. Madras Medical Establishment, &c. Edinburgh, 1828. 8vo.

A Practical Essay on Stricture of the Rectum, Illustrated by Cases, &c. By Frederick Salmon, one of the Surgeons to the General Dispensary, Aldersgate Street. Second Edition. London, 1828. 8vo.

A Series of Observations on Strictures of the Urethra; with an Account of a New Method of Treatment successfully adopted in cases of the most obstinate and aggravated form of that disease; Illustrated by Cases and a Plate. By Richard Antony Stafford, Member of the R. C. S. L. London, 1828. 8vo.

Lexicon Pharmaceuticum, or a Pharmaceutical Dictionary, comprehending the Pharmacopœias of London, Edinburgh, and Dublin, with a variety of other useful information relative to Medicine and Pharmacy, designed expressly for the use of Students. By Thomas Castle, F. L. S. M. R. C. S. &c. Second Edition, with Corrections, and an additional Appendix on the New Remedies. London, 1828. 12mo. Pp. 352.

Observations and Experiments on the Efficacy and *Modus Operandi* of Cupping Glasses in preventing and arresting the Effects of Poisoned Wounds. By Caspar Wistar Pennock, M. D. Philadelphia, 1828. Pp. 20. 8vo.

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ERRATUM.

In Vol. XXIX. p. 360, *instead of* Dr Hood of Liverpool, *read* Mr Hood of Ayton.

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PART I.

ORIGINAL COMMUNICATIONS.

Art. I.—*Some Account of an Anomalous Disease which raged in the Islands of St Thomas and Santa Cruz, in the West Indies, during the Months of September, October, November, December, and January* 1827–8. By George W. Stedman, M. D. Member of the Medico-Chirurgical Society of Edinburgh, and formerly President of the Royal Medical Society of Edinburgh.

Towards the end of September 1827, a disease of a very singular character suddenly made its appearance in the Island of St Thomas, and attacked almost every individual in the town, which contains a population of about 12,000 souls. As it was unknown to the faculty, the vulgar, as commonly happens, gave it names of their own; and, ridiculous as they may sound, they soon became the only appellations of the new malady. The English negroes in St Thomas called it the *Dandy Fever*, while the French vulgar called it the *Bouquet*, which again was corrupted into the *Bucket*. However ridiculous the names are by which this fever has been distinguished, it deserves, from the singularity, as well as the novelty of its symptoms, to be made known to the medical world.

The disease appeared so suddenly, and spread with such rapidity, and the suffering attending it was so great, that at first it caused universal alarm, and was considered a sort of plague that would probably ravage the whole country. It was soon, however, discovered, that although a very painful, it was by no means a dangerous disease, and that, if the attack was rapid, the recovery was no less speedy. This at least was the general belief, until longer experience showed the troublesome nature of the secondary pains that constitute the third stage of the disorder. But though not fatal, it was sufficiently formidable, both from the pains that accompanied it, and the universality of its attack, to excite the deepest interest both among practitioners of medicine and in the public at large.

Not a day passed but hundreds were attacked; and of this the consequence was a great interruption to trade, in the most crowded port in the West Indies. It is well known that St Thomas is the great *entrepôt* for the trade of Europe and the United States of America to Columbia and the islands. Being a free port, and possessing one of the best harbours in the West Indies, it is always crowded with vessels from every part of the world, and from every civilized nation. That it should become the seat of a new disease cannot therefore appear wonderful.

The fever of which I now propose to treat was most distinctly divided into three stages, each of which was distinguished by characteristic and unequivocal symptoms. It was on this account at first reported that no person was safe until he had undergone three attacks of the disease. But longer experience convinced every one, that these apparently distinct attacks were only successive stages of the same malady.

The invasion of the symptoms was not less sudden than their progress was rapid. A person walking along the street might be suddenly seized with acute pain in one or both knees —in the ankles—the wrists—or in all of these joints at once— though in general only one was at first affected. Upon attempting to move the affected joint, he would find to his surprise that it was stiff, and that the least motion gave so much pain as to render a second attempt impossible. It is even said that when the disease first appeared in St Thomas, several negroes, who, being all at once attacked with the pain in the knees, had fallen down, were actually apprehended by the police for drunkenness.

The most usual mode of attack, however, which appears not a little singular, was the following:—A person in perfect health would suddenly feel a stiffness amounting almost to pain in one of his fingers, and most frequently his little finger. The stiffness increased, and was accompanied by an intense degree of pain, which spread rapidly over the whole hand, and up the arm to the shoulder. The fingers of both hands in a few hours became swelled, stiff, and painful, preventing all attempts at bending the joints.

This was followed in a short time by restlessness, depression of spirits, and a degree of nausea, ending in some cases in vomiting. Then came on shivering, succeeded by fever, great heat of skin, intense headach, most acute pain in the back, knees, ankles, and in short in every joint. But perhaps the most distressing symptom of this stage was the intense pain in the eyeballs, which appeared to the patient too large for the socket, and ready to start from the head. In some cases the first stage was ushered in by an irregular distribution of blood, so that while the hands and feet were cold, the rest of the body, particularly the head, was intensely hot.

The fever and heat of skin by degrees became established. The head and eyes now particularly suffered, and, together with the joints, the whole body was racked with pain, so that the unhappy sufferer could not tell of which he would rather get rid had he the choice. In my opinion, the pain in the eyes and back was the most afflicting ; but most people experienced equal torture in every part of the body. In some the features were swollen and distorted, especially the eyelids ; in others the fingers suffered most in this way ; while in one or two cases, along with the swelling of the face, a profuse ptyalism took place.

Another peculiar feature of this disease is, that patients complained during all its different stages of a feeling of intense cold, and felt the warmest coverings scarcely enough. This feeling was observed even when the skin to the touch was intensely hot. When I had the disease I was obliged to cover myself with two or three blankets, although the weather at the time was sultry.

In every case, where the first stage was in any degree well marked, even patients who had suffered the most severely from the common fever of the country declared that they had never experienced, nor could have conceived, pains equal to what they felt in this fever. Not one inch of the body from head to foot was exempt from suffering. This, together with the restlessness, which in general forms the most disagreeable symptom in common fevers, and a distressing sickness of stomach, which also occurred in many instances, rendered this disease more painful than any that usually afflict mankind.

These symptoms, if not relieved by art, continued with more or less severity for twenty-four or thirty-six hours. The fever generally abated about that time, and, as the fever went off, the pains of the joints grew less and less severe, leaving the fingers, ankles, and toes last.

The patient then continued in a state of languor, irritability, and restlessness for three days, during which there was a complete absence of fever. But, as happens after fevers in general, although there was no acute suffering, the feelings were very different from those of health. Added to these ordinary consequences of fever, this intermediate period was characterized by complete want both of thirst and hunger in some; while others who felt thirst had no hunger. The sense of taste seemed entirely lost, so that no difference could be perceived between the taste of a biscuit and a beef steak, or any other articles of food the most dissimilar. This was more distressing in some than in others; and those who had it most had, at the same time, little apthous sores on the inside of the lips and on the tongue, which rendered eating painful.

The third or fourth day after the primary fever, but generally the third, was ushered in by a degree of fever more or less severe. For while some people were merely feverish, others had so smart an attack, as to be obliged to return to bed.

An efflorescence was perceived at the same time to begin at the palms of the hands, and to spread over the whole body. It is difficult for me to describe the precise appearance of the efflorescence; and I regret to say that I could get no one to delineate it for me. Some idea, however, may be formed of its general appearance, for it differed a good deal in different cases, by imagining a *blotch* or *wheal* of red-coloured skin between that of scarlet fever and that of measles. The efflorescence was accompanied in the severer cases by swelling of the feet, hands, and face, particularly the eyelids, and by a distressing tingling, which, as the eruption disappeared, became an intense itching, that almost drove the sufferers distracted. The efflorescence generally began to fade on the second day, and was entirely gone before the third morning. This was followed in almost every case by some degree of desquamation, which in a few instances, as will be afterwards related, gave rise to very troublesome consequences. This secondary fever generally disappeared early on the second day.

This is the second or eruptive stage, which, in my opinion, stamps the chief distinction on the complaint, and proves it beyond doubt to be one of the exanthemata.

After the eruptive stage, the patient began to recover his spirits and his strength; but in many cases a complete want of taste remained for some days.

Many people did not get rid of the pains in the joints for many weeks, the third or rheumatic stage coming on immediately after the eruptive. In general, however, the disease gave a degree of respite for three, four, and even in some cases six weeks, and then attacked the joints with more pain and paralysis than at first. These pains were not accompanied by fever; and they generally fixed themselves in one or two joints, and continued to excruciate the patient for weeks together. It is remarkable that they were always severest in the morning, and wore off in some measure towards evening. Some people, in addition to the secondary pains, were tormented by the most distressing itching of the skin; while in others the joints, particularly those of the fingers, became stiff, painful, and swelled to such a degree as to produce deformity.

The secondary pains were chiefly felt in the joints, especially in the joints of the fingers and toes, the wrists, the ankles, and the knees. Many people were rendered bed-ridden for several days. In these the slightest motion gave such intense agony as to call forth groans and shrieks of pain even from the most resolute. It was pitiable to see the patients who suffered the last part of the disease severely. Stout able men were to be seen lying flat on their backs, afraid to move even the little finger, and hardly venturing to breathe. To lift a hand to the head seemed almost impossible; and they were consequently obliged to have their food put into their mouth as if they were babies.

Except these local pains, and the general irritation which they naturally created, no other symptom of disease remained. The appetite was good, although the sense of taste was still somewhat blunted; and the unhappy patient, with most of the feelings of health about him, lay pinioned to the spot, like Gulliver when he awoke on the shore of Lilliput.

This description, it may easily be imagined, applies only to the severest form of the disease; for nothing more distinguished this malady than the infinite varieties of its severity, and the disproportioned violence of its different stages. For while some, who underwent the primary fever with the utmost mildness, had the eruptive attack with great violence; others, who had passed gently through both, and were congratulating themselves on their escape, were suddenly crippled by the secondary pains.

In a period varying from three to four or six days, however, the pains began gradually to recede, deserting one joint after another, until they remain fixed for some time in one. This process occupied several weeks, and was often attended by relapses, which brought the patient back to his former state of pain and weakness. It was universally observed, however, that the pains were intense in the morning, and generally became less severe towards evening. It was also remarked, that those whose unavoidable occupations forced them to exertion, or who had resolution enough to exert themselves voluntarily, got sooner rid of the pains than those that gave way to them.

After the malady had raged for some time, and people were beginning to recover, it was not a little amusing to see almost the whole population limping about, some with their arms in slings, and others with their bodies half bent, and several on staves or crutches.

Besides these secondary pains, some persons were afflicted with a continual itchiness of the skin, which prevented sleep, and rendered life intolerable.

One old gentleman, nearly 80 years of age, who had undergone the primary disease with great mildness, had the eruption in a form so severe, that his skin came off in flakes like pieces of parchment, and left his whole body quite red. In fact, he resembled a boiled lobster in colour. This affection was attended with so distressing an itching, that he was in the utmost misery. He was cured by cooling purgatives, large draughts of a solution of cream of tartar, and a strong wash made of nitric acid and water.

In some old men the skin came off the scrotum, producing a most intolerable itching; while in others who had a tendency to swelled testicle, that part swelled to a great degree. Others, who were subject to the disease called in the West Indies the *Rose*, and which is nothing but the primary disease of which elephantiasis is a sequela, had a return of their complaint, terminating in several instances in extensive abscess.

One young gentleman, a patient of mine, was confined to his bed for nearly two months with acute pain in his left foot and ankle. The ankle at first seemed as if it were going to suppurate, for it was red, tender, and soft to the touch. These appearances gradually receded under the use of poultices, leaving the part as painful as before. It is only now upwards of two months since the commencement of his illness, that the unhappy patient is able to move about with crutches; and the least motion in the ankle-joint still gives great pain.

Though the description I have now given applies to the usual form of the disease, yet there were many anomalies in its mode of attack. Thus, in some few cases, the eruption occurred on the first or second day of the primary fever, while in other instances no eruption at all was to be noticed.

In one instance, Mr M., a manager at an estate near town, the primary fever came on, with an eruption of a most peculiar character, consisting of large blotches or rather wheals, that varied in size from a shilling to a half-crown, red, and raised perceptibly above the surface of the skin, and giving a distinct feeling of roughness and elevation to the finger when passed over them. This eruption continued two days, and was accompanied by all the symptoms that peculiarly distinguish the first stage.

The disease proved fatal only in three instances, and, strange to say, they were in negroes, although this class of persons had the disease in general with infinitely greater mildness than the white inhabitants. This was an extremely fortunate circumstance; for, as the disease came on about crop time, had the negroes, who form the agricultural labourers, been as severely attacked as their masters, and suffered as much from the secondary pains, the whole crop must have been lost, and misery and wretchedness would have ravaged the country. Fortunately, however, the negroes in general had the disease in its mildest form, and were rarely afflicted with severe secondary pains. It is a remarkable circumstance which I may mention here, that the household servants had the disease, both primary and secondary, with infinitely more severity than their more laborious brethren of the field.

Of the cases which I have mentioned as fatal, two were children about five or six months old, who died from irritation consequent upon a most severe desquamation of the cuticle, followed by inflammation of the true skin, that, from head to foot, was red, raw, and exceedingly painful. The other case was that of a negro man, a field labourer, who, after passing through the first stage, was attacked with violent inflammation of the lungs, and died of it, although incessant attention was paid to him.

That this disease was contagious, I have not the least doubt, and I shall, I think, be able to bring forward sufficient evidence to this effect, when I come to treat of the disease more in detail. I shall there show its progress from house to house, and from estate to estate. In the meantime, the mode of practice must be detailed.

The cases, as they at first appeared in this island, were so mild, that during the first stage or stages of great excitement, I contented myself with prescribing purgatives, followed in the evening by the warm bath, or pediluvium and diaphoretic remedies. In many cases, however, I could do nothing but prescribe palliatives, as the patients declared that they could not take purgatives, owing to the pain which the least motion gave them.

Where the pain of the head was very intense, I applied a blister to the back of the neck, with great relief to the patient. Where the pain in the eyeballs was chiefly complained of, mustard cataplasms were applied for about half an hour to the temples with great benefit. Sometimes the back was the part most affected. In this case the pain stretched up to the muscles of respiration, producing a difficulty and pain in breathing that might at first be mistaken for an affection of the lungs. This was entirely removed by the application of a strong mustard plaster to the small of the back. Perhaps nothing can show better the distressing nature of these pains, than that patients expressed pleasure when they felt the pain of the blisters or the mustard plasters, as these remedies relieved them from the deep-seated aching pain of the fever.

As the epidemic became more severe, I found it necessary to have recourse to bleeding, and the great success that at once attended the practice determined me to continue it. The following is an account of the first case in which I bled in this fever.

Case.—C. S. Esq. aged 21, was suddenly attacked, on November 11, 1827, with shivering, intense pain in the knees, ankles, back, and head, accompanied with full quick pulse, heat and dryness of skin, and unusual thirst. Next day when he sent for me, I found him labouring under all these symptoms, and affected with the most agonizing pains in the head and back; his eyes had a peculiar yellowish muddy appearance, which in this climate is a sure sign of great congestion in the head. His fingers also pained him, but they were not so much swelled as in most cases.

I prescribed six grains of calomel and divided doses of Epsom salt to produce full evacuations; and directed the skin to be frequently sponged with cold vinegar and water. In the evening, although he had free evacuations, and had been sponged during the whole day with vinegar and water, the headach was not relieved; the fever still continued with unabated intensity; the skin was hot; and the pulse full and strong. At his own request, I bled him in the arm to ℥xij. with immediate relief to the fever, headach, and all the other symptoms. He rested well that night; next day he was out walking, complaining only of a little stiffness in the joints; and he subsequently went through the eruptive stage and secondary pains with comparative ease.

The bleeding in this case evidently cut short the disease, and produced such instant relief, as determined me to make use of the remedy afterwards in every case where there was any symptom of plethora.

Though I found bleeding of the greatest use, I made it a rule never to have recourse to it until the febrile excitement was fully established During the period of partial congestion, which preceded the more severe symptoms in this as in other fevers, I had recourse to the general or partial warm bath with very beneficial effect. Brisk purgatives then followed. Nothing, however, seemed of so much use as bleeding from a large orifice. In using this remedy I was not always guided by the pulse; for

I found that though the pulse might be small and weak, the relief afforded was nevertheless great, and the pain in the affected parts much lessened. When the bowels were well opened, I used after bleeding in the severer cases, and even without it in the milder, to prescribe a dose of Dover's powder at bedtime, preceded by the warm bath or *pediluvium*. The powder I gave according to the strength of the patient. For a stout person I found gr. xij. not too much, while to few did I give less than gr. viij. To those who objected to the powder, I gave the *Haustus Anodynus Antimonialis*, and followed the dose in both with warm diluent drinks.

These remedies frequently produced perspiration and sleep, to the great comfort of the patient. Often when sweating could not be produced, sleep was procured; though it also happened frequently that neither the one nor the other followed. Bleeding and purging may therefore be considered as the chief remedies in the stage of excitement, while blisters, sinapisms, and sudorifics, especially the two former, were powerful assistants.

The relief afforded by bleeding was more speedy, and better marked in this complaint than in any other that I have seen; and after a few trials, the fame of the remedy spread so fast, that patients used to call for the lancet as soon as they saw the Doctor appear. Immediately after bleeding, the pains of the joints were greatly diminished, the pulse and skin became more natural, the headach and pain of eyes were diminished, and the patient expressed himself thankful for the load that was taken from his body. These good effects were not merely temporary, but seemed permanently to influence the disease, rendering each stage milder than it would otherwise have been. The eruptive stage, in particular, was much mitigated by bleeding on the onset of the primary fever, while the after-pains did not seem to be so much under its control.

I have in no case bled more than once; and I generally took from twelve or fifteen to twenty ounces of blood, according to the strength of the patient. Whether bleeding in the other stages might have been of use I know not; for I never tried it, nor did I think that the symptoms warranted such a practice.

During the eruption I found cooling purgatives, and such beverages as tamarind beverage, cream of tartar in solution, along with the use of the nitric acid wash, of the greatest benefit. For the apthæ and soreness of the mouth, alum or borax washes were prescribed with good effect. The secondary pains were not much under the control of medicine, but they were in many cases relieved by the nightly use of the warm bath or pediluvium, followed by diaphoretics, and chiefly by stimulating the joints with the volatile liniment, oil of turpentine, strong alcohol, &c.

I may mention, that although it is more than three months since the epidemic broke out in this island, many people are still suffering very much from the secondary pains, which have no doubt been prolonged by an unusually damp and cold state of weather, accompanied with frequent gusts of wind from the north and north-east.

Although I allow the influence of the weather in aggravating the secondary pains, and even the primary disease, I think there is evidence enough to prove that it is of a contagious nature; that it was imported into St Thomas, and from thence into this island. The proofs of this I will now proceed to detail.

It is often a matter of much difficulty to determine whether a disease, which is widely spread, owes its origin and progress to a peculiar constitution of the atmosphere, or whether it is conveyed by infection. In the former case, the disease runs with such rapidity from one individual to another, that though its cause may be meteorological, if I may be allowed the expression, yet it puts on many of the appearances of a disease propagated by infection; while in the latter case the progress of a contagious disease may be so rapid, and it may affect so many individuals at one time, that it may be difficult to prove that it does not arise from the state of the atmosphere or some other natural cause. Hence it is that the question of the contagious or non-contagious nature of some diseases has long divided, and still continues to divide, the medical world. A familiar example will occur to every one in the yellow fever.

There are, however, I think, certain tests by which a cautious and impartial inquirer may arrive at the truth, and which form a distinction between the two that cannot easily be overlooked.

These may be divided into the *negative* and the *positive*.

Of the *negative*, the first is where a disease which is ascribed to a particular state of weather is found to prevail during a state of weather and temperature quite different from that which is supposed to have given it origin. And a still better test is, where this same fever passes to a neighbouring district or country, and there takes root among the population, notwithstanding a state of weather opposite to such as was supposed to have produced it. The *second negative test* is where a disease which is supposed to have arisen from a great natural commotion, such as a storm or hurricane, not only comes on a long time after such a phenomenon, but also passes to a neighbouring island or country which had experienced a similar commotion of nature, before that country in which the disease is supposed to have originated. When a disease occurs under one or both of these circumstances, we may safely pronounce it *not* to be dependent upon any peculiar state of the weather or atmosphere.

The *positive proofs are*, 1*st*, Its importation into a country by one or several individuals. 2*d*, Its proceeding from individual to individual, and from place to place, according to the circumstances of contiguity or intercourse.

Now it appears to me, that if we trace the progress of the epidemic I now describe, it will be found to tally completely with all the foregoing rules.

It may be necessary, however, for the better understanding of the proofs of the contagion, to give a slight topographical sketch of these islands.

The Island of St Thomas, where the disease first appeared, is one of the Virgin Islands, to the east of the large Island of Puerto Rico, and situated in longitude 64.51 west of Greenwich, and latitude 18.21 north. It is, as I have already mentioned, chiefly remarkable for the excellence of its harbour and its central situation, which, combined with its peculiar political privilege of being a free port, have raised it to the rank of the chief commercial port in the West Indies. The country is rocky and barren, containing only a few sugar estates. The town, however, is rich and populous, and contains a varied population from all parts of Europe and America.

The town is built on the sides of three hills that converge round the harbour, leaving a narrow strip of land towards the shore, where the principal street runs. This is well built and paved; but the rest of the town, from the local inequalities, is irregular and rugged. This situation exposes the town to a considerable degree of heat; for not only are the winds shut out from the landside, but the reflection of the sun's rays from the hills greatly augments the temperature. These circumstances, together with the crowd necessarily assembled for commercial purposes in a limited space, and the constant change that is taking place in a population chiefly composed of strangers, render St Thomas one of the most unhealthy situations in the West Indies, and one of the favourite seats of the yellow fever.

About thirty-five miles to the south-east of St Thomas lies the Island of St Croix, or Santa Cruz, the chief possession of the Danes in the West Indies, and the seat of the general government. It is about thirty miles long, and about six or seven broad, and contains a population of between 30,000 and 40,000 souls, of whom only about 2000 are whites. It is the very reverse of St Thomas in its physical and political character, being as fertile and well cultivated as the other is barren, and being allowed but very little liberty of trade.

The population is chiefly employed in the cultivation of sugar; and to such a height is agriculture carried, that it is universally reckoned one of the most beautiful, best cultivated, and healthiest islands in the West Indies. So high is its reputation in the last respect, that it has of late years become a favourite resort for invalids from the United States of North America, where it is considered as the Montpellier of the West Indies.

It has two towns, the capital named Christianstædt, at the east part of the island, which has a good harbour, but of difficult access, owing to reefs near its mouth; and Frederickstædt, situate on an open bay, at the west end. Owing to its greater proximity, and from being the seat of government, there is much greater intercourse between St Thomas and Christianstædt than with the other two. It will not therefore seem surprising that the epidemic made its appearance in Christianstædt a week or two before it reached Frederickstædt.

On the 17th of August 1827, the Island of St Croix was visited by an awful hurricane, which drove the vessels ashore, threw down houses, tore up the strongest trees from the roots, and laid all the canes flat on the ground, causing an immense damage to the crop. Although the loss was great, yet, from the great strength of the buildings throughout the country, the population suffered little compared to what they used to suffer at a more remote period, when the island was not so highly cultivated as at present. This hurricane was partially felt at St Thomas, but it was not until the 27th that they experienced the full severity of a gale. This did a great deal of damage to the shipping, driving the greater number ashore. The town, however, escaped comparatively unhurt, as all the principal houses are very strongly built.

The new fever did not make its appearance, as far as I can learn, until towards the end of September, or beginning of October. Strange rumours of a plague that struck people down at once reached us from time to time; and it was not until it had raged some weeks that the nature of the disease began to be understood. It was then considered a highly painful and contagious disease, but accompanied with no danger.

It is a remarkable fact, that in a population of about 12,000 souls, who occupy the town of St Thomas, scarcely a single individual escaped.

All the medical men were attacked one after the other; and those who had escaped yellow fever in its most concentrated form found that they had no exemption from the new malady.

The contagion was supposed to be brought by a vessel from the coast of Africa, which touched at St Thomas. This, however, is not ascertained. The disease had been raging for a week or two at Christianstædt before it made its appearance at Frederickstædt, where I reside.

The weather during the months of September and October was extremely warm, the thermometer often rising to 90° of Fahrenheit at noon. We had a few partial showers, but the weather on the whole was dry. We had two days of universal rain in September, which produced the usual concomitants of fever, accompanied with cough and other symptoms of cold. The fever was generally severe, the skin very hot, and the headach intense. These were removed by the tepid bath, blisters, and antimonials; and when the fever assumed the intermittent form, by the exhibition of bark or quinine. Inflammations of the eyes were very common, and with difficulty gave way to the most active antiphlogistic treatment. A slight form of dysentery was also very prevalent, especially among the negroes.

These diseases soon gave way as the warm weather again returned; and at the time the new fever appeared among us, the weather was very warm and clear, and the health of the people very good. The disease appeared in Frederickstædt about the beginning of November.

The first patient I saw was a mulatto woman, an attendant of two young ladies, who had come from St Thomas on a visit to a family in this town. One of the young ladies had the first stage of the new fever a day or two before she arrived. Her attendant had one day of fever before she left St Thomas. I was called to see her on the third day, when I found her labouring under violent pains of her knees and ankles, but not much fever.

The next patient I saw was Mrs F. the wife of Mr F. who keeps a store for the sale of various articles about 200 yards distant, on the opposite side of the street from the house where the mulatto woman above-mentioned resided. As Mr F. has frequent occasion, in pursuit of his commercial occupations, to go to Christianstædt, it is not wonderful that the complaint early appeared in his family.

Mrs F. had intense fever, pain of head, heaviness and wateriness of eyes, much heat of skin, great pain of the wrists, knees, ankles, and soles of the feet. I saw her for the first time on November 2, 1827, and ordered for her a cooling powder, composed of four drachms of Epsom salts rubbed finely down, with one scruple of magnesia. Her daughter, a child about 7 years of age, was affected much in the same way and at the same time, only the fever was not so violent.

In the evening, I found Mrs F. somewhat better. The medicine had operated freely, and still continued to operate. The skin was cooler, but still warm, and the pains of the knees and wrists still continued severe. I recommended the tepid bath, both for her and her child. Next day (3d November) she was free from fever, but still complained of pain and stiffness in the joints, particularly the knees. The medicine had operated during the greater part of the night, and she seemed rather weak. The child was altogether better.

Two other of the children were attacked in the same way with violent fever and pains in the joints, particularly a boy about 8 years of age. He complained chiefly of his head, back, and knees. The heat of his skin was very great. Purgatives and the warm bath soon cured these symptoms, and he was better next day

On the 7th of November, I was called to see Mrs F. and also the daughter who had been first affected. On the preceding evening, an efflorescence, partaking in some measure both of the character of the efflorescence of scarlet fever and measles, had appeared on the neck, feet, and arms, both of mother and daughter. The eruption in neither was painful; but Mrs F. described a large spot on her leg, which she said was about the size of a dollar, and gave her great pain when touched. The eruption had come on in both with a return of the fever, though slighter than at first. The child's eruption had disappeared when I saw her about 11 A. M. but her mother's still continued, accompanied with the peculiar watery and heavy appearance of the eyes, which I have already described. She complained also of pain and stiffness in her knees and wrists, and of great heaviness in the head, with an overpowering inclination to sleep. I ordered her twelve grains of Dover's powder.

The rest of the family, who had the primary disease, got the eruptive fever also; but I was not called to see them, as the symptoms were not considered severe enough to require the attendance of a physician. Mr F. himself subsequently, with every member of his family, including servants, got the complaint.

I have written in my note-book at the time, " This disease does not appear to depend on the state of the weather; for although we have had some partial showers, the weather, on the whole, has been very dry, and the heat very great."

I have mentioned already that the disease was brought over from St Thomas's by some strangers. It is a remarkable circumstance, in confirmation of its infectious nature, that it appeared first at Major S.'s, where the ladies from St Thomas's went to reside; and that, with the exception of Mr F.'s family, who got the disease from another source, it raged there almost exclusively for some time. The following account of the cases as I noted them at the time will serve to prove the regular progress of the disease.

Case I.—Sunday, November 4, 1827. Lucy, a black woman, æt. 40. Fever, headach, pain of knees, ankles, and arms; tongue foul.

Remedies.—Purgatives, warm pediluvium.

Monday, 5th—Better; fever gone; great stiffness of joints, especially knees.

Case II.—Phillis, a black woman, æt. 30. Fever, heat of skin, pain of chest, knees and feet; fore-finger of right hand swollen and painful.

Remedies.—Purgatives.

Case III.—Charlotte, a black woman, æt. 50. Fever, pain of hands, extending up to the shoulders; intense pain of knees and ankles; skin hot.

Remedies.—Purgatives.

Case IV.—John, a black boy, æt. 8 years. I saw him three hours after he was attacked; he had fever, drowsiness, heat of skin, pain of one hand, and of knees.

Remedies.—Purgatives.

Tuesday, November 6th.—Lucy. Up; some fever, some pain of joints; tongue foul and red at the edges; headach gone.

Remedies.—Five calomel pills, followed by Epsom salts.

Phillis.—Fever continues as yesterday; pain of head; fingers in both hands swollen, so that she cannot shut her hands; the fingers are very painful, the pain extends up to the arm-pits and shoulders; pains in the feet, ankles, and knees; tongue cleaner. Has had salts this morning, which operated well.

Remedies.—Warm pediluvium; Dover's powders, gr. x. followed by warm beverages.

Charlotte.—No fever; no pain any where; pulse, tongue, and skin natural; a little stiffness in the joints.

Remedies.—Epsom salts.

John.—Fever as yesterday; he seems very heavy; complains of great pain in his head and eyes; his eyes resemble those of a person labouring under a severe cold; great pain in his wrists, ankles, and knees. Bowels open by medicine.

Remedies.—Pediluvium warm; Dover's powders, gr. viij. followed by warm beverages.

Wednesday, November 7th, 1827.—Lucy. Up; No fever; some stiffness of joints and redness of tongue; breath foul; refuses any more medicine.

Phillis.—Up; no fever, no pain; bowels open; stiffness of joints continues; finger better, but still stiff. Sudorific of use last night.

Remedies.—A Dover's powder.

Charlotte.—Convalescent.

JOHN.—Sweated well last night; no fever; stiffness of joints continues; otherwise better.

Remedies.—Salts.

CASE 5.—NELSON, a black man, æt. 22.—This morning felt pain of his back and knees, succeeded by fever, headach, pain and stiffness of fingers, the pain stretching up to the shoulders; great pain of head; skin hot; tongue red at edges.

Remedies.—Has had six calomel pills this morning. To have Epsom salts, and if they have a good effect, a dose of Dover's powder of gr. xij. at night.

CASE 6.—Miss A. S. daughter of Major S. had boasted to me yesterday that she at least would escape the disease that was raging in their house. She was then in perfect health. About seven P. M. yesterday (6th November) she was suddenly seized with pain in both knees, extending down to the soles of the feet. This was immediately followed by shivering, and then intense heat of skin, *pain of the fingers and wrists,* the back, and the head. She spent a restless and sleepless night, tormented by fever and pains in every part of the body.

When I saw her to-day (November 7) at eleven A. M. the pulse was upwards of 110, tense, firm, and small; there was intense pain of head; eyes heavy and watery, like a person suffering under a severe cold; intense pain in the eyeballs; the tongue was foul; great anxiety of countenance, and restlessness; fingers somewhat swelled, very painful, and incapable of being wholly closed. When she attempts to close the fingers, she complains of intense pain across the wrists, the pain stretches up to the shoulders; great pain in the knees and ankles. Complains most of the pain in her head and back. I proposed the warm bath; but with this she would not comply, as the moving from bed, she said, would give her too much pain. She feels most at ease when she keeps herself warm.

Remedies.—Has taken six calomel pills without effect this morning. Let her have a dose of Seidlitz powder, and a dose of Dover's powder at bedtime.

Evening.—Symptoms much the same, but restlessness and fever less. Calomel operated well; vomited the Seidlitz, and refuses the Dover's powder.

Remedies.—Let her have a tea-spoonful of antimonial wine at bedtime, and the warm bath.

November 8th.—The antimonial wine produced a little sickness, but along with the bath gave rise to a perspiration which afforded relief. Passed a better night; fever less; tongue clean; eyes still watery, but less so than before. Still complains of great pain in the eyeballs; head not so painful; fingers less swelled, but painful and stiff; great pain still in back and knees.

Remedies.—A Dover's powder.

November 9th.—All the symptoms relieved; she walks about; fever gone, but still complains of some heaviness in the eyes, and stiffness, particularly in the fingers, wrists, and knees.'

This lady continued gradually to improve, although she complained of want of taste and appetite, and of considerable feebleness in her limbs, until the 13th of November, when she found, on awaking, that her fingers were stiff, and that she could not bend them without difficulty and pain. There was also a feeling of tension and fulness, particularly in the palms of the hands. She had some fever, and her hands and arms were copiously covered with an efflorescence, which partly resembled measles, and partly scarlet fever. This eruptive fever lasted one day. Next day the eruption began to fade, and the fever had altogether ceased. The stiffness and weakness of the joints continued several weeks after the primary attack.

Having thus described this case, which was one of the severest that first occurred, I proceed with the history of the epidemic.

NELSON, on the evening of November 7, suffered great pain of the head, back, knees, and ankles; his fingers were swelled and stiff. Fever continues. Eyes heavy and watery; heat of skin intense; tongue foul. The medicine has not operated well.

Remedies.—Let him have Epsom salts, and omit the Dover's powder.

HENRY, a black boy, æt. 8 years.—Seized about seven P. M. I saw him at half-past eight P. M. He first complained of pain of fingers, particularly the little finger of left hand, and of pain of knees, back, and head; eyes heavy and watery; pulse quick; skin intensely hot; tongue foul.

Remedies.—Has had salts, which operated slightly. To have more.

Thursday, November 8.—NELSON. Salts operated during most of the night; tongue foul; eyes heavy, and face still a little swollen; headach less; skin hot. Complains chiefly of back, of knees, and of fingers, which last he cannot bend with ease.

Remedies.—To have salts immediately, and a sudorific at night.

Major S. æt. 70.—About eight P. M. November 7, felt in the instep of the right foot a sense of weight, which gradually became a pain increased by pressure. The whole leg soon became very heavy, and the pain began to creep up the leg. About twelve at night a severe fit of rigors was immediately succeeded by violent fever, accompanied with headach, pain of back, knees, and fingers. He slept little, and was very restless.

The symptoms on the 8th, when I saw him, were great pain of head, back, knees, and especially on the right instep, which had a red and erysipelatous appearance. There was great pain also in the other leg. The eyes were heavy; skin intensely hot; tongue foul.

Remedies.—Has taken five calomel pills and some Epsom salts. To continue the use of the salts, and to drink plentifully of a solution of cream of tartar.

CORDELIA, a black woman, æt. 30.—Was attacked about four hours ago with pain and stiffness of fingers, followed by pain of head, back, knees, and soles of feet. Complains chiefly of head and back, and cannot move. Tongue foul; skin intensely hot; eyes heavy and watery.

Remedies.—To have Epsom salts immediately.

It would be tedious to go minutely through every case that occurred, those that I have already detailed being sufficient to show the symptoms of the disease when it first appeared. Suffice it to say, that every member of the S— family got the fever with various degrees of severity. The Major had it nearly three days, and on the 13th November relapsed, and had fever, accompanied with a copious efflorescence, which partly resembled the efflorescence of scarlet fever, and partly that of measles. The pains returned at the same time, but not with so much violence. The pain of the head in particular was not so intense. The efflorescence began to fade on the second day, and the fever went off at the same time. The pains and stiffness in the joints, however, continued to afflict this old gentleman for upwards of two months after the primary attack.

All the members of this family had a secondary fever, coming on the third or fourth day after the primary fever, and accompanied with the peculiar efflorescence already described. They all suffered for many weeks from the after-pains.

Many of the servants also had the secondary fever on the third or fourth day after the first attack, accompanied with a sense of tingling, and a glossy appearance of the skin. This was certainly the eruption, although the nature of their complexion prevented it from being visible.

The next family that was attacked was that of Mrs F. who lives next door to the family last mentioned. It first attacked her daughter, a girl about 11 years of age, on the 10th of November. It spread through the whole family, and attacked all the servants in succession.

The disease now rapidly spread through the town, but always according to the degree of communication among individuals.

The family of Captain S. the son-in-law of Major S. was next attacked, and then the families in their neighbourhood.

The disease soon attacked our family. My father had been called over to St Thomas's to see the governor-general, who had been attacked with the remittent fever when on a visit to that island. He returned on Sunday the 4th November. On Monday evening he was seized with pain of back, knees, ankles, and in fact all his joints. His tongue was foul, and his breath of a bad odour. In two days he was better, and had apparently recovered, when another paroxysm of fever came on, accompanied with a copious efflorescence, like that above described. This paroxysm was accompanied with violent pain in all the joints, and also in the fingers. It lasted one day. The fever subsequently degenerated into an intermittent fever, which was aggravated into a remittent that nearly cut him off.

A servant of ours, named Margaret, had been employed in nursing a child of Mrs H. in our neighbourhood, in whose family the disease was raging. She was shortly after attacked with the disease herself. She complained of pain in all her joints, particularly her knees and fingers; also of pain in the back and head. She had intense pain in the eyes; her face was swelled; and what is curious, she had considerable ptyalism. The fever continued two days, and then abated, leaving her stiff and tormented with pains in the joints. From this woman it spread through our whole establishment until all the servants, twenty-two in number, had taken the disease. It first attacked a woman named Grace, Margaret's mother; then a woman named Rebecca, who assisted Grace as cook; then a woman named Janet, who lived next door to Grace; and so on until it had gone through them all.

My sister, Mrs B., was the next subject on whom the disease fell. From her it spread through all her family and servants.

Mr A., a gentleman who lives opposite to us, was the next subject. He was bled for the disease with great relief to all the symptoms. His lady and her sister were next attacked. They also were bled with great relief. From these it spread through the whole family, and to all the servants.

The disease now began to spread into the country, and it is observable that those estates suffered first that were nearest the town, and which had most communication with it, either from the residence of a family or from other causes of communication. Mr B. has two estates, one near town and another about four or five miles distant. The negroes on the estate nearest town got the disease first, and shortly after those on the more distant estate, *at a time when the disease had not spread to the other estates in the neighbourhood.* This earlier communication of the contagion is easily accounted for, from the circumstance, that the negroes of the two estates sometimes work together, and have altogether more communication than any two estates at such a distance from each other. This is a remarkable fact, and one that strongly confirms the contagious nature of the disease.

In short, the disease spread from family to family, and from estate to estate, exactly in proportion to their contiguity, or to the intercourse that might happen to exist. When it entered any family, it seldom happened that any individual escaped.

At the same time that the disease was so universal, it affected individuals even of the same family very differently. While some had it in the most severe form, others were so slightly attacked as hardly to be aware of the primary fever, and only to be convinced of their having had it by the second or eruptive attack. In every one of the cases which I have recorded the secondary pains came on in a period varying from two, four, to six weeks, from the end of the first stage. I myself, after being able to go about for more than a fortnight, was suddenly seized, and for a time crippled by the after-pains; while Mr A. escaped for five or six weeks, and then was so severely affected by them as to be unable to lift his hand to his head. To such an extent did these pains prevail, that all society was at a stand, and nobody thought of stirring, except about the most indispensable business.

The facts now detailed constitute what I have to offer as the positive proofs of the contagious nature of the disease. They might have been made much more ample and circumstantial; but I have refrained, in order not to draw too much on the patience of the reader, which I am afraid has already been sufficiently tried.

I now proceed to apply the negative proofs.

The first of these is, that the disease appeared in Santa Cruz at a time when the weather was warm, still, and even sultry;—that it continued to rage, certainly with increased violence, after the weather had become cool, rainy, and windy;—and that it again declined, and appeared to have lost the violence of its symptoms, during a continuance and even aggravation of the cold blustering weather.

It may appear singular to speak of cold weather in the West Indies; but it is well known that our feelings of heat and cold are relative, and cannot be measured by the thermometer. Thus the people of the West Indies, accustomed to the intense heat of the climate, with their pores relaxed, and their bodies enfeebled from long residence, are more affected by a damp atmosphere, with the thermometer ranging from 74° to 77°, than a hardy Briton would be by a much colder atmosphere in his native country. During the month of January the disease has been much rarer in its attacks, and these have been of a milder character than before, though the weather has been cold, damp, rainy, and windy; such in fact in every respect as might be supposed to give rise to such a fever.

Now it appears evident, that, if this fever owed its origin to a cold and damp state of the atmosphere, and was propagated by it, it would *not* have broken out in the island during a warm, dry, and sultry state of weather, nor would it have begun to disappear at a time when the weather was moist, cold, and damp.

Did the disease again originate from the hurricane it would have broken out in Santa Cruz before it began in St Thomas, and it would not have waited twelve weeks before it appeared in the former island. For I have already mentioned that the hurricane took place in Santa Cruz on the 17th August, while the new fever did not make its appearance until the beginning of November.

Some of the physicians here seem to consider this fever the same as that described by Dr Rush, under the name of the Break Bone Fever, or the Bilious Remittent Fever, for the description of which see Rush's works, Vol. i. p. 126, *et seq.* I think that it will be evident to every one who pays the least attention to the symptoms, that the diseases, though somewhat alike in a few symptoms, are essentially different.

Four circumstances chiefly distinguish the fever that I have described. 1*st*, The suddenness and peculiarity in its mode of attack ; 2*dly*, The well-marked distinction between the different stages ; 3*dly*, the peculiar eruption ; 4*thly*, the peculiar nature and duration of the after-pains.

It is impossible that circumstances so very evident could have escaped the notice of so keen and accurate an observer of disease as Dr Rush, a man to whose genius medicine is so much indebted. It is true that he mentions a difficulty of moving the fingers, but this occurred only *in one instance*, and did not form one of the most common symptoms of the disease, as it did in the new fever. A rash is also spoken of, but only as an occasional and fortuitous occurrence ; while the whole description of the fever shows that it was truly what Dr Rush called it, a form of the common bilious remittent fever. It does not appear, too, that the fever was contagious, but, on the contrary, that it depended altogether on the state of the weather.

That new diseases arise from time to time while others die out, the history of the scarlet fever, measles, small-pox, and leprosy, fully prove. And it may be observed, that it is chiefly contagious diseases whose first origin can be traced by history.

The small-pox, scarlet fever, and measles, were brought by the Saracens to Europe, while the venereal disease rewarded the discoveries of the western hemisphere. On the other hand, the leprosy which was once so common in Europe is now almost extinct, so that its very symptoms have become a matter of controversy.

I will conclude this paper by proposing a name for the new fever, which appears to me to characterize it tolerably well. As the chief symptoms are the pains in the joints and the eruption, I think that the Eruptive Articular or Rheumatic Fever would not be an inappropriate name.

This, however, is a matter that can be better settled by my learned brethren of Europe. I therefore conclude with the hope that I have done my duty in endeavouring to record a disease attended with so many curious symptoms, as justly to challenge the attention of every medical man, and particularly of those who are destined to practice in tropical countries.

ART. II.—*Observations on the Coagulation of the Blood.*

By JOHN DAVY, M. D., F. R. S., Physician to the Forces.

FOR some time past, as opportunities have occurred, I have repeated many of the experiments which have been made relative to the coagulation of the blood, and I have instituted some new ones, the results of both of which I shall now communicate, with the anxious desire of avoiding error and arriving at truth on a subject of considerable interest, as it concerns many physiological doctrines, and of no trifling importance in relation to some parts of the practice of physic.

1. *Of the effect of violent agitation on the blood.*

Dr Bostock, in the first volume of his Elementary System of Physiology, remarks, " It is well known that if blood, as it is discharged from the vessels, be briskly stirred about for some time, the process of coagulation is entirely prevented from taking place, either in consequence of a more complete union of its parts with each other, which prevents their future separation, or from the fibrin, after it has been for some time discharged from the blood, losing this peculiar property by which its particles are attracted together."

To ascertain if a brisk motion does really prevent the coagulation of the blood, as is asserted by this respectable and learned author, I made the following experiment, preferring it to the means mentioned by Dr Bostock, as we know that by stirring the blood its fibrin merely is separated, and not its property of coagulating destroyed.

About two ounces of blood were received into a large vial, and immediately shaken violently, and the agitation was continued without intermission for ten minutes, which was two minutes after the blood at rest coagulated. The result was, that the blood thus shaken acquired a scarlet hue from being mixed with, and from the action of, air, and *appeared* to be liquid.

But this was merely in appearance; for when poured on a filter it separated into two parts,—one, serum with colouring matter, which passed through the filter; the other, fibrin in a finely divided state, coloured by adhering red particles, which remained on the filter.

This effect of agitation may be imitated by breaking up the crassamentum of the blood with the fingers, when an apparent solid is rendered an apparent liquid. Nor is this at all surprising, considering the small quantity of solid matter contained in the crassamentum, to which it performs the part, as it were, of a cement, or of calcareous matter to sand, combined with which the sand constitutes a solid rock, and deprived of which, it is a yielding quicksand, almost as fluid as the red particles of the blood deprived of fibrin.

2. *Of the effect of moderate agitation on the blood.*

Dr Scudamore, in his Essay on the Blood, endeavours to show that moderate agitation of the blood favours its coagulation; and, conceiving that his experiments prove the fact, he accounts for it on the idea, that agitation accelerates the escape of the carbonic acid gas, which he supposes the blood contains, and on the escape of which he supposes the phenomena of coagulation to depend.

It may appear a most easy matter to decide whether moderate agitation does or does not accelerate the coagulation of the blood,—the experiment is so simple and so easily made; and yet I must confess I have experienced considerable difficulty in arriving at a conclusion, from the contradictory nature not of one or two, but of many results. The great difficulty in this inquiry, and in most inquiries relative to the blood, is the impossibility of knowing that any two portions of the same fluid are exactly similar. My opinion is, that no two portions are, and even that no two drops of this fluid are, exactly similarly constituted, or possessed of exactly the same properties; and that the portions of a continuous stream flowing from the arm, were it divided into a hundred, may all be different. The results of experiments first led me to adopt this notion, in which I was confirmed by farther experiments, and by reflecting on the subject. Not to be tedious, I shall here mention only one experiment, the most conclusive which I can offer:—Six gallipots of the same size, and a platina crucible of nearly the same size, were filled in succession with blood as it flowed from the arm. They were placed close to each other, and carefully observed. The blood in each did not coagulate, as one would have expected, in the order in which it was received, but irregularly. Thus the first received was the last but one to coagulate, and that received in the crucible, which was the fourth in succession, coagulated first. When one reflects on the subject, the inference appears to me to be obviously what I have suggested above,—that no two drops of blood are precisely similar in their composition and properties. It is evident on reflection, that the fluid of a continuous stream of blood must be derived from different parts of the body. In one portion there may be an unusual or less than usual quantity derived from the vessels of the muscles, or brain, or liver, or spleen, &c. ; and we cannot but suppose that the blood from the kidney, after urine has been secreted from it, is different from the blood from the liver or pancreas, after supplying bile and the pancreatic fluid. The preceding experiment and this reasoning are confirmed by another fact which I have observed, viz. that if the crassamentum, the instant it is formed, is removed, it will be succeeded by another coagulum ; and if this is removed, by another, and so on repeatedly, till all the fibrin has coagulated,—clearly demonstrating, that in any given quantity of blood there are particles of fibrin of various degrees of rapidity of coagulation.

To return now to the effect of moderate agitation on the coagulation of the blood, it may be easily understood how seemingly contradictory results may be obtained if the effect is not very well marked. It certainly is not well marked. In some instances it appeared rather to retard ; in others neither to retard or accelerate ; and in others, and those the majority, to accelerate coagulation. As the majority of the experiments which I have made indicate this, I infer that agitation does promote the coagulation of the blood out of the body. But, admitting it to be a fact, I cannot adopt Dr Scudamore's explanation of it, as I do not believe that any free carbonic acid gas is contained in the blood, or, if it were, that its removal would have the effect he imagines. I believe it is owing to a very different cause. I find that when a small portion of crassamentum is put into blood, its coagulation is distinctly accelerated, having an effect similar to that of a crystal in a saturated saline solution ready to crystallize ; and it has occurred to me that agitation may promote coagulation by producing a more intimate mixture of the particles,—of those which are first coagulated with those which are still liquid ;—I say " first coagulated," because it may be inferred that some particles are coagulated almost immediately after the blood is drawn, and these may act on the mass like a portion of crassamentum introduced into it.

3. *Of the effect of change of temperature on the coagulation of the blood.*

It is agreed by all those who have made experiments on the subject, that cold retards the coagulation of the blood. My own results are in conformity with this, and with the results of the accurate Hewson, that the viscidity of the blood is at the same time increased.

At the temperature 32°, I have seen blood remain liquid more than an hour. A temperature some degrees lower was required to freeze it. When frozen it appeared as a homogeneous mass. After having been kept some time frozen, about half an hour, its temperature was raised, when it again became liquid, and then coagulated as if fresh from the body. From which, I am disposed to infer, that blood may be frozen for any length of time, without losing its power of coagulating, and without losing its power of becoming liquid,—a happy circumstance in relation to the animal economy in those regions in which the cold of winter is severe, and exposed parts of the body are liable to be frost-bitten ; and perhaps equally so, I may remark farther, is the circumstance of the liquidity of the blood being diminished by cold, in relation to animals which hibernate during several months of the year in a state of torpor, in which life is barely maintained.

From the experiments which I have made on the effect of a high degree of temperature, as 120°, of a moderate degree, as 100°, and of degrees between this and the freezing point, I am disposed to infer, that the first immediately renders the blood more liquid, and accelerates its coagulation ; that the second rather retards than accelerates coagulation ; and that at 80° or 90° its coagulation is less rapid than at 120°, and more rapid than at 100°. It may appear a paradox, that heat above 100° should increase the liquidity of the blood and accelerate its coagulation; but is it more so than that cold should render it more thick and viscid, and yet retard or prevent coagulation? I infer that the effect of heat is such as I have represented it, from observing blood heated to the degree mentioned, and which coagulated more rapidly than blood not so heated, covered with a buffy coat, when the cool blood, slower in coagulating, was free from it. It is a mysterious fluid the blood,—nothing can with propriety be taken for granted respecting it. Its properties can only be ascertained by exact experiment and unbiassed observation.

4. *Of the effect of different kinds of vessels on the blood.*

It is generally supposed, that the kind of vessel in which the blood is received, its size, form, and quality, have a considerable influence in promoting or retarding its coagulation, and the formation of a buffy coat. I have made many experiments to endeavour to ascertain the truth of this opinion, but I have not yet been able to arrive at a satisfactory conclusion. I am rather disposed to think that wood and polished metals retard coagulation, and that glass and earthenware accelerate it. The form and size of the vessel will of course have some influence, were it merely in connection with temperature. The remarks which I have made relative to the difficulty of ascertaining the effect of moderate motion on the blood are particularly applicable here, and, *a fortiori*, as the effect of the quality of the vessels I have tried is even more ambiguous than that of motion.

5. *Of the effect of removing atmospheric pressure from the blood.*

According to Dr Scudamore blood coagulates in vacuo more rapidly than in the open air, and becomes of a considerably darker colour. * I have tried this experiment repeatedly, and the result has invariably been negative. The blood which coagulated under the exhausted receiver was of the same colour as some which, for the sake of comparison, was left exposed to the atmosphere, and its rate of coagulating was much the same, certainly not quicker, rather slower, and its temperature was a little lower, in one instance 5° of Fahrenheit's scale lower. Nor have I found any material effect produced on the coagulation of the blood by receiving it, as it flowed from the arm, into oil which had been previously deprived of air by the air pump, whether under the influence of atmospheric pressure in the open air, or excluded from it, under an exhausted receiver.

6. *Of the effect of oxygen and of carbonic acid gas on the blood.*

Sir Humphry Davy, in his Researches on Nitrous Oxide, states that he did not find the coagulation of venous blood affected by either of these gases. According to Dr Scudamore, blood coagulates sooner in oxygen gas than in atmospheric air, and has its temperature raised, and in carbonic acid gas it coagulates slower and cools sooner. The experiments which I have made have afforded results similar to those first mentioned, and in opposition to Dr Scudamore's. I have not found the coagulation of the blood distinctly accelerated by oxygen or retarded by carbonic acid; nor have I found its temperature raised by the former. And I did not simply expose the *surface* of the blood to the influence of the gases, in the manner in which Dr Scudamore made his experiments, but I agitated the blood in each gas. Of the oxygen, there did not appear to be any absorption; but of the carbonic acid gas there was a very considerable one, equal in volume to that of the blood used, or very nearly so. I have also tried the effect of water strongly impregnated with carbonic acid gas on the blood, and of oxygen gas on the crassamentum of the blood, and the results have been similar. The temperature of the cold crassamentum was not raised, and the coagulation of the fluid blood was not prevented.

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* Vide Essay on the Blood, p. 22.

Merely hypothetically considered, I do not comprehend how either oxygen, hydrogen, or azote, or any other gas, which is not absorbed rapidly by the blood, can materially affect the coagulation of this fluid, or can be the means of producing a sensible evolution of caloric,—and more especially by simple contact of surface, as in the experiments of Dr Scudamore on these gases. At the same time, I beg leave to remark, that I do not consider the negative results of my experiments with oxygen in the slightest degree hostile to that view of the generation of animal heat in which the chief source of it is referred to the lungs and to the formation of carbonic acid gas in the air-cells of the lungs. I need not say that there is an infinite difference between the natural process of respiration and the rude experiment just alluded to,—whether we consider the apparatus, the material or the situation,—and more particularly when we consider, that in one instance vitality is present as an agent, and in the other the agents are merely chemical and dead.

I must confess, too, that, hypothetically considered, I am equally at a loss to conceive how carbonic acid gas should retard the coagulation of blood. If it were true that blood abounds in carbonic acid gas, and the coagulation of blood depends on the evolution of carbonic acid gas, then in the act of coagulating it ought not to absorb an additional quantity of this acid gas; or, if it did absorb it, it ought not to coagulate; and indeed it ought not to coagulate though it did not absorb it, so long as it was in an atmosphere of carbonic acid gas, and so long as it retained the proportion of gas supposed to belong to it, and to be essential to it. Were there not a consistency in nature there could be no science. To me it appears most unreasonable and most inconsistent to fancy, that the blood or alkaline fluid not saturated with carbonic acid, capable of combining with a fresh portion of it, should contain free carbonic acid, and be capable of giving it off. I speak of the blood not of the body, as of a bone or muscle detached from the animal, deprived of life, and subject to the same laws as ordinary dead matter. The *argumentum ad absurdum* is on this occasion forcibly applicable.

7. *Of the effect of water, milk, urine, and bile, on the coagulation of the blood.*

It has been remarked by Dr Crawford in his Treatise on

Animal Heat, that by the dilution of blood with water, in the proportion of twelve parts of the latter to one of the former, its coagulation is retarded for several hours. In one instance that I made this experiment, at the end of two hours the diluted blood appeared to be liquid, but when thrown on a filter this appearance proved to be deception ; the fibrin had coagulated, and it was collected on the filter in the form of a very tender gelatinous mass. From this, and from other experiments, I am inclined to infer, as might be expected, *a priori*, that dilution with water, by removing the particles of fibrin to a greater distance from each other, and by suddenly cooling the blood, does retard its coagulation, but not so long as Dr Crawford conceived, who framed his opinion on the subject merely from the appearance of the blood.

Milk, urine, and bile, I find, also retard the coagulation of the blood, and more so even than water. The urine and bile used were human, the milk, cow's. The results of the experiment with the urine are perhaps not undeserving of more particular notice. About two ounces of blood were mixed as it flowed from the arm with four ounces of urine, containing perhaps rather a larger proportion than usual of urea. After about an hour and a-half the blood had gelatinized. After twenty-four hours it had coagulated pretty firmly ; the coagulum was much contracted and slightly cupped, and covered with a thick buffy coat. After forty-eight hours the coagulum was still more contracted, and it had acquired a globular form, with a little convexity on its upper surface. The urine was only just perceptibly coloured by the colouring matter of the blood. I may here incidentally remark, that this fluid is particularly well adapted as a medium for displaying the phenomena of the coagulation of the blood, from its retarding the effect, and yet not preventing it, and from its not dissolving the red particles. It enables one to determine in a satisfactory manner, that the phenomena of the buffy coat and the cupping of the blood are owing to an unequal distribution of the fibrin ; and that when they occur there is an excess of fibrin at the surface of the crassamentum, and a deficiency of it below the surface in a regular gradation, and that the buffy coat is cupped in consequence of the unusual contraction of the fibrin and its consequent accumulation at the circumference.

8. *Of the effect of substances on the blood which do not coagulate serum.*

According to their effect, as I have ascertained by experiment, these substances may be divided into three classes: 1*st*, those which do not distinctly retard or accelerate the coagulation of the blood; 2*d*, those which retard or prevent its coagulation; and 3*d*, those which accelerate or otherwise alter it. I shall enumerate the substances which I have tried of each class.

1. Chloride of silver, protoxide and peroxide of antimony, red precipitate, sulphur, iodine, hydrocyanic acid, carbonate of lime, starch, sugar, camphor, sulphuric ether, oil of peppermint, cantharides, oil of turpertine, hydroboracic acid, gum arabic.

2. Rhubarb, ipecacuanha, cinchona, columba, myrrh, catechu, jalap, the extract prepared *in vacuo* of belladonna, digitalis, aconite, conium and sarsaparilla, the common extract of cinchona, magnesia, carbonate of magnesia, tartarized antimony, supertartrate of potash, triple prussiate of potash, muriate of barytes, nitrate of barytes, borax, common salt, nitre, sal ammoniac, subcarbonate of ammonia, subcarbonate of soda, distilled vinegar.

3. Tartaric acid, oxalic acid, chlorate of potash, lime, calomel.

A very few substances there were, the classification of which is not rigorously correct, as oil of turpentine, extract of opium, hydroboracic acid, gum arabic, and calomel, from the nature of the effect which they produced. The three first mentioned seemed to retard coagulation a little; so did gum arabic; whilst calomel seemed to accelerate it a little. Opium and calomel seemed to promote the contraction of the crassamentum; the hydroboracic acid had a contrary effect, and gum arabic appeared to prevent it entirely.

I may mention, that in all the trials definite quantities were used, and the substances, whether in the form of fine powder, or soft extract, or liquid, were intimately mixed with the blood the instant it was drawn from the vein, and that the results were noted down as they were observed. It would be tedious to enter here into the minute details of so many experiments, and unnecessary in relation to my present design. I prefer confining myself to the general results, and shall notice particularly only such things as seem to be new.

Relative to the first class of substances, I have little to observe, excepting that in each instance there was some slight peculiarity in the result, as either in relation to the colour or degree of consistence of the crassamentum.

The effects of the second class were still more various. Most of these substances produced a thickening, and increased the viscidity of the blood;—the former was especially the effect of the vegetable substances, and the latter of some of the salts, particularly borax and subcarbonate of soda. Very few of the substances tried had a contrary effect; it was well marked only in three instances, viz. that of the triple prussiate of potash, cream of tartar, and tartarized antimony, with each of which the red particles rapidly subsided, no coagulation took place, and the fibrin remained completely dissolved in the serum. In some instances, and in the majority, the red particles were kept suspended or were dissolved; the former generally when the blood was rendered thicker and more viscid; the latter in the instance of distilled vinegar and *aqua ammoniæ.* The difference of effect as to change of colour was very various indeed; most commonly it was darkened; in a very few instances it was rendered of a lighter and brighter red, but this change was not always permanent. On dilution with water, almost in every instance the influence of the foreign substance ceased, and the blood coagulated; and I believe it would have done so in every instance, with the exception of vinegar and *aqua ammoniæ*, and apparently of magnesia, were the due proportion of water known which should have been added. Mr Hewson, I believe, was the first who noticed this singular effect, but his observations, if I am not mistaken, were confined chiefly to the neutral salts; and I am not aware that he was acquainted with the fact which I have observed, that blood may be kept liquid or viscid for days, and even weeks, without losing its power of coagulating, and the fibrin of contracting, when properly diluted with water; and another fact intimately connected with this, that when thus kept liquid or viscid, it does not putrefy, but on dilution it putrefies readily, so that a neutral salt and a vegetable extract has an effect on the blood somewhat similar to that of life. In alluding to Mr Hewson's observations, I may do him injustice, as I have not his excellent work to consult, and it is long since I have read it;—an apology which (if I have erred unintentionally) would not be admissible in London or Edinburgh, but which, I am sorry to state, is too valid here, where, far removed from libraries and the aids of science, the inquirer after knowledge is almost entirely thrown upon his private resources. I have said that vinegar and ammonia are exceptions in this class of substances, differing from them in preventing the coagulation of the blood, however carefully diluted with water, and that magnesia is apparently an exception also. The vinegar and *aqua ammoniæ* appear to dissolve, and that permanently, the fibrin and the colouring matter. The appearance of magnesia being an exception also, I have found is deception, and chiefly in consequence of the circumstance, that on dilution the coagulable lymph does not form a gelatinous mass, but is precipitated in flocculi.

Relative to the effect of the third class of substances there is great variety. Oxalic acid instantly coagulates the blood, renders it of the colour of pitch, and of firm consistence. Tartaric acid, on the contrary, retards the coagulation for a time. After two hours, the blood to which it was added was in a frothy state from entangled air-bubbles, viscid, and of the colour of pitch. After twenty-four hours, it had become firmly coagulated and friable. Lime darkened the colour of the blood, and speedily formed with it a tough mass. Chlorate of potash retarded its coagulation, and rendered the colour of the blood immediately lighter; after some hours coagulation took place, the coagulum acquired a firm consistence without contracting, became almost black, contained some air-bubbles, and emitted a very peculiar smell.

9. *Of the effect of substances on the blood which coagulate serum or precipitate its albumen.*

I have tried the following substances which came under the above denomination, the sulphuric, nitric, and muriatic acids, sulphurous acid, barytes, alum, nitrate of silver, sulphate of copper, alcohol, sulphate of zinc. All of these apparently coagulate both the fibrin and the serum of the blood. The effect is produced almost instantaneously, excepting in the instances of sulphurous acid and barytes, and is generally attended with a change of colour of the red particles. Neither sulphurous acid gas, nor the liquid acid nor barytes has any immediate effect, except that of darkening the blood; but in a few hours both the acid and alkaline earth render it of firm consistence like strong jelly, and they have the same effect, in a less degree, on serum, which they convert slowly into a jelly-like mass, pretty firm and semitransparent. It is curious and worthy of remark, that the compound of albumen and nitrate of silver, or perhaps it may be more correct to say, the compound formed by the precipitation of albumen by this salt, though insoluble in water, is soluble in acetic acid, and its solution in this acid is not precipitated by common salt.

The blood used in all the experiments, the results of which have been given, was venous blood, taken from men in the prime of life, labouring under various diseases. I have not considered it necessary to specify the nature of these diseases, or the peculiarities of the blood in each instance, the object of my inquiry being totally different from the investigation of the properties of this fluid in a morbid state. It may be proper at the same time to notice, that disease was not lost sight of, and that in such experiments in which it was desirable to use healthy blood, the blood employed was from men labouring under slight complaints, or just attacked with severe ones, and a portion of it was always preserved for comparison.

On the principle of induction, it appears to me that the following conclusions may be drawn from the results contained in this paper relative to the coagulation of the blood: 1*st*, That it takes place independent of motion, and that it is very little affected by motion, whether violent or moderate; 2*dly*, That it is not caused by the action of atmospheric air, or much affected by any kind of air that is not absorbable by water; 3*dly*, That it is not retarded by the introduction and absorption of carbonic acid gas; and *lastly*, That the action of reagents on the blood, or the fibrin of the blood, as regards coagulation, is exceedingly various, not to be anticipated *a priori*, and inexplicable on any one hypothesis hitherto advanced, the effect of each of them requiring special consideration, and further and minute experimental inquiry for its elucidation.

Malta, April 12, 1828.

ART. III.—*Observations on a peculiar swelling of the Lower Extremity after Fever.* By ALEXANDER TWEEDIE, M.D. Physician to the London Fever Hospital, &c. &c.

THE excellent and learned paper of Professor Duncan on Diffuse Inflammation of the Cellular Tissue, published in the first volume of the Transactions of the Medical and Chirurgical Society of Edinburgh, and more recently that of Mr Lawrence on Erysipelas, in the 14th volume of the Transactions of the Medico-Chirurgical Society of London, have directed the attention of the profession to the pathology and treatment of some important local affections originating in inflammation of the cellular tissue; and it is with the view of adding to the valuable illustrations contained in these papers, that I now offer a few remarks on a peculiar swelling of the lower extremity, which occasionally comes on during the progress of or convalescence from fever.

It has been cursorily noticed by Dr Cheyne in his report of the Hardwicke Fever Hospital, among the sequelæ of fever, as an "affection not confined to the female sex, resembling *phlegmatia dolens*," but he has not alluded to either its pathology or treatment.

It corresponds very much in its character and progress with the puerperal *phlegmatia dolens*, although from its resemblance to the œdematous swelling of the lower extremities, which occasionally appears after cases of protracted fever, its real nature and treatment are apt to be overlooked.

This disease, which I conceive to be inflammation of the cellular tissue of the limbs, differs, however, in many particulars.

For example, in all the instances I have seen the swelling has been confined to one extremity, making its appearance first about the upper part, extending gradually over the whole limb, and being attended with acute pain. It does not retain the impression of the finger, as in common œdema, which generally commences round the ankle and foot, and seldom extends much higher.

I have treated several cases of this affection within the last four years at the London Fever Hospital. All the subjects of it were females, two of whom were under 20 years of age, and unmarried. I have been informed, however, that one case occurred in a male; but I have not been able to trace the history or treatment.

It may be remarked, that in all the instances which came under my notice, active depletion had been employed in the treatment of the fever, so that the convalescence was rendered somewhat tedious; and the first warning of the disease was given by symptoms of general excitement, which led me to expect either relapse or some visceral inflammation. In a few hours, however, the cause of the general disturbance became more apparent, from the patient complaining of stiffness in one of the lower extremities, followed by aching pain either about the upper and inner part of the thigh, or in the ham, around the knee or calf of the leg; and as rheumatism is by no means an unfrequent accidental accompaniment of fever at certain seasons, the uneasiness and pain in the limb are at first very apt to be ascribed to this cause.

In the course of twelve to eighteen hours the pain and stiffness increase, and on the limb being examined, it is found somewhat swollen and perceptibly hotter than the opposite; but there is no redness of the skin, which, on the contrary, has a smooth, white, shining appearance, and the cutaneous veins are distended with blood, and occasionally tortuous. As the disease advances, the swelling extends uniformly over the limb from the upper part of the thigh to the toes, and feels tense and elastic, but not at all diminished by the semiflexed position of the limb, which the patient generally prefers.

I also remarked the total inability to move the limb, not so much on account of pain, as from want of command over the voluntary muscles. This peculiarity has been noticed by Mr Burns in the puerperal *phlegmatia dolens.*

When active treatment has been adopted, the pain abates, the swelling loses its elasticity and tension, so as to retain partially the impression of the fingers about the foot and ankle, and the heat of the limb diminishes, but the power of moving it continues for a long time considerably impaired.

In one case the disease terminated in ill-conditioned suppuration, and fluctuation being discovered on the fore part of the leg, an incision was made through the integuments, and a considerable quantity of thin sero-purulent fluid escaped. In this instance the affection differed from common abscess in there being no wall or cyst to confine the matter, which was lodged among the muscles and required the application of a bandage to prevent its farther diffusion as it was secreted. This patient, after a tedious convalescence, completely recovered the use of the limb.

The two following cases, which have recently come under my care, will illustrate the disease, and the treatment which, under the view I have taken of its pathology, seems best adapted to subdue it.

Case I.—Mary Bennett, 36 years of age, unmarried, was admitted into the London Fever Hospital on the 2d November 1827.

She had been the subject of fever for ten days previous to admission, the brain being the organ principally affected from the commencement of her illness. She had been twice largely bled from the arm, and afterwards leeched on the temples, from which measures only temporary relief was procured. The severity of the disease being therefore still unsubdued, the pulse strong and full, the face flushed, and the skin hot, it was deemed adviseable on her admission into the hospital to repeat the venesection among the other antiphlogistic measures adopted. These being still insufficient to relieve the head, she was largely cupped, which, with the constant application of a cold lotion to the scalp and active purgatives, completely subdued the cerebral symptoms, and in a few days she was evidently convalescing. About a week after, however, and before she was permitted to sit out of bed, symptoms of fever became evident, and on the following day she complained of uneasiness in the left lower extremity, which on examination was found considerably swollen from the groin to the toes, and very painful when touched or moved.

The integuments were hot, smooth, shining, of a pale marble white colour, and on the fore part of the tibia there was a large mark or scar, seemingly produced by previous vesication. On inquiry it was found that some time previously she had erysipelas of the leg, which terminated in extensive vesication on the seat of the cicatrix. Judging the disease to be of an inflammatory character, I directed twelve ounces of blood to be taken from the upper and inner part of the thigh, over the region of the inguinal vessels, and afterwards fomentations to be applied to the limb.

These measures had the effect of diminishing the pain, but the swelling continued to increase, the circumference of the affected thigh measuring twenty-eight inches. At this period my friend Mr Lawrence did me the favour to give his opinion, and, deeming the view I had taken of the disease to be correct, agreed with me in the necessity of the repeated local abstraction of blood, and the diligent use of hot fomentations. She was at the same time put on a course of purgative and diuretic medicines.

Twelve to fifteen leeches were accordingly applied over the general surface of the limbs every second day, so that in the course of the succeeding ten days eighty-four leeches had been applied; and the following is the report in the journal of the progress of the disease at this period:—

Skin of moderate heat; tongue quite clean; bowels open; urine in natural quantity and appearance; good appetite; sleeps well; pulse 108. The circumference of the affected limb has not diminished, but the integuments are much softer, and the leg and foot when pressed retain the impression of the finger, and the circumference of the leg has decreased half an inch.—The same medicines to be continued.

On the 15th the integuments of the limb are reported to be still warmer than natural, but the swelling to have much subsided, so that the whole limb feels softer; general health much improved.—A cold lotion to be applied to the limb.

On the 23d the swelling of the limb is noted to have been gradually decreasing, and the surface to be of natural temperature.—The limb was directed to be bandaged.

On the 26th December she was dismissed from the hospital, the limb being nearly reduced to its former size; and she had no perceptible lameness.

Case II.—Anne Davis, 27 years of age, married, was admitted into the London Fever Hospital on the 29th November 1827, in the thirteenth day of fever.

The symptoms on admission indicating intestinal inflammation, she was bled generally and locally, besides the adoption of other measures calculated to subdue the abdominal disease.

The convalescence, which was slow, was farther protracted by an attack of inflammation of the throat, for which the repeated local abstraction of blood was necessary.

In this debilitated state she was seized with shivering, followed by hot skin, thirst, and headach. These symptoms were succeeded by pain in the calf and ham of the right leg, extending in the course of a few hours over the whole limb; the skin was paler than natural, hot, smooth, and shining, and the whole thigh and leg were considerably enlarged. Twelve leeches were applied to the limb, and this was followed by anodyne fomentations and saline aperients.

These measures having procured only partial relief, the leeches were again applied, and muriate of ammonia added to the fomentation, from which she derived great relief, the swelling, heat, and pain of the limb subsiding in the course of a few days.

A threatened renewal of the disease a few days after was arrested by another application of the leeches and fomentation as before recommended.

It was a considerable time before this woman regained the complete use of her limb. A bandage was applied after the pain had subsided, which contributed materially to reduce the swelling; and she was dismissed from the hospital on the 6th of February 1828, free from complaint.

Ely Place, London, July 1828.

ART. IV.—*Observations on Fistula Lachrymalis, and the recommendation of a more simple plan of operating.* By EDWARD THOMPSON, Member of the Royal College of Surgeons, London.

BEFORE the plan recommended by Mr Ware for the cure of *fistula lachrymalis* was practised, the operation might be looked upon as a rude one. The method pursued by Pott was any thing but a surgical proceeding; and although the gut was gradually introduced through the natural canal, it possessed little to recommend it over the methods employed before his time. The simple operation of Anel,—that of passing a probe through the upper puncture, and overcoming the contraction by carrying it along the natural passage into the nose, which some have incorrectly called Mr Travers's method,—was either not known or else forgotten. This method, although superior to any of the operations then in use, soon ceased to be employed even in the country in which it was proposed, probably from the difficulty of performing it, or from a wish to resort to more severe means, which in the infancy of surgery were always preferred.

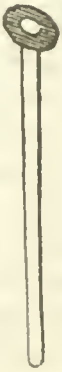
Of the operation by Mr Wathen, which only differed from the old manner in the tube being inserted through the natural canal, instead of the bone, Mr Ware has left us no very favourable character. The trouble experienced in abstracting these tubes, as after a longer or shorter period they either became filled with hardened mucus, or suffered displacement, appears to have caused more annoyance than any of his operations. That a method which so often failed in effecting a permanent cure, and was so difficult to remedy after it had failed, should have been immediately deserted after the plan by Ware became known, is not surprising. A dead substance can never be accommodated to a living one for any length of time, without undergoing some change either in situation or otherwise, which requires its being reapplied or adjusted. This mode, with slight modification, has been revived by Dupuytren, and has found an advocate in Mr Teale. The cases are interesting; but it remains to be proved how far they will be eventually successful. Mr Ware had to remove several of Wathen's tubes a length of time after their introduction, in consequence of unpleasant effects arising from their presence. I do not know that they have, as foreign bodies, ever excited irritation or nervous pain; but Le Dran states that he has known a bougie kept in the canal too long cause in certain habits distressing symptoms, which it is not improbable may occasionally occur after the introduction of permanent metallic tubes. Cases of the most violent *tic douloureux* are on record, caused by the presence of foreign substances under the integument. Although the example of Dupuytren may go far in recommendation of the measure, it probably will never become general, as the advantages are greatly overbalanced by defects. The practice pursued by Baron Larrey,—the use of cat-gut,—had been fully tried before his time and appreciated. It is now nearly laid aside.

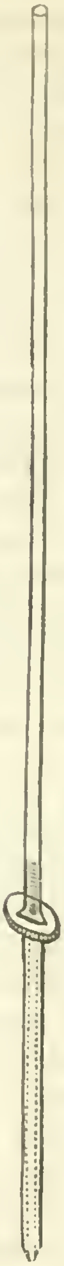
The mode lately proposed of puncturing the sac alone, and forming a small fistulous opening externally, without interfering with the duct, may succeed in some cases, but with others it will not. Mere inflammation of the sac and duct does not constitute true fistula. Matter may form as a consequence of inflammation, and it may be necessary to evacuate it, or it may burst forth; but the thickening of the membrane will often subside after such evacuation, and the canal become pervious, if the external opening be not suddenly healed. I have seen this take place in one or two instances, and probably the cases related have been of the like kind. It is difficult to suppose, in the cases alluded to, a total obstruction of the canal to have permanently existed, as the tears in that case would still run over the cheek. It is, however, a method that may occasionally prevent the necessity of opening the canal, which, by waiting a time, would of itself become pervious, the inflammation and thickening gradually subsiding.

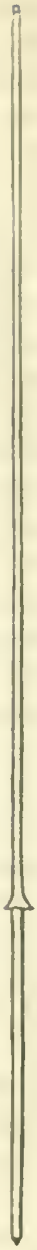
The operations, therefore,—for it is unnecessary to allude to those of Garengeot, Schobinger, and others,—that deserve the greatest attention, are those of Anel, Heister, and Ware. Anel's operation is that followed by Mr Travers, and consists in not opening the canal to its full size, but merely introducing a small probe through the superior punctum. This operation is defective, because, as the opening is very small, a slight inflammation, excited by whatever means, will suffice to close it up again, and therefore a recurrence to the operation will frequently be necessary. This is not mere supposition; it is grounded in fact. It is also more difficult to perform than that of Mr Ware, which stands in the way of its universal adoption, although by a little attention the difficulty is surmounted. Heister preferred this method with certain modifications, and thought it applicable to nearly every case; but it is not easy to set aside the stigma that has been attached to it, that of its being little better than a palliative measure. The operation, then, that appears the freest from objection is the one proposed by Mr Ware. Any one who will take the trouble to look into the history of this disease will see, that the mere opening of the natural canal, and the introduction of substances to prevent its closure, did not emanate from either Pott, Wathen, or Ware. On the Continent it had been practised many years before Pott published his observations. Petit used to pass a bougie through the canal, and others after his time did the same. But bougies or probes were introduced generally after an external opening had been formed by ulceration, and therefore differed from the methods pursued by the authors above named, and particularly Mr Ware's. The passing of a probe through the duct, and the subsequent introduction of a style, were peculiarly his own, and was certainly an improvement in the treatment which has not been bettered.

It may be interesting to inquire,—if it be allowed that the treatment is one which may be depended upon,—whether Mr Ware's mode may not be improved by the steps of the operation being shortened and more simplified. In the usual way of operating the sac is first opened by a knife, the probe and style following each other in succession. The necessity of making a triple operation is not very evident. All that is required is the introduction of a body to prevent the agglutination of the passage, which body might be carried down at once with the probe employed to clear the obstruction. The opening through the skin need not be larger than the style; indeed it is an advantage to have it not so. An unseemly scar is what all wish to avoid; and it was one recommendation of Mr Ware's method, that, in this respect, it surpassed all prior operations in which an opening was made. The moderns pay less attention to this particular than Mr Ware did. Dupuytren plunges a knife, such as is delineated in Averill's work, fully into the canal, making an opening much larger than there is occasion for; and except it be, as of old, to get a peep into the sac, which Le Dran thought of the greatest consequence, or to evacuate the contents, which would find their way without such precaution, the necessity for it is not apparent. To insert a tube into the channel is bad surgery, as experience has proved; and, therefore, the opening is larger than is required for a style, which M. Dupuytren's method will at last come to. One object in performing *fistula lachrymalis*, well known to those conversant in the operation, is to have the incision in a direct line with the longitudinal direction of the duct. In the usual way of proceeding this is sometimes omitted, and the steps of the operation impeded by it, and the patient put to additional pain. This admits of ready remedy by instituting a mean by which the apertures in the skin, sac, and canal may be made simultaneously. Heister informs us that a surgeon of Hamburgh was in the habit of plunging an instrument at once through the skin, sac, and *os unguis*, into the nose, to lessen the pain and hasten the operation. He gives a view of the instrument, which appears better fitted to knock a man down than to complete a delicate operation; yet, nevertheless, the principle deserves attention.

Without being aware of this operation, I was struck, after opening a fistula a short time since in the common way, with the idea of the practicability of such a measure, and its advantages over the common methods. The instrument which I propose for effecting the end consists merely of a steel probe, five inches long, with a trocar point, which probe is admitted into a silver cannula, of the size of a common style, and shaped like it, with a diagonal head. This cannula is prevented falling off, when the instrument is held perpendicularly, by the usual spring, and a slight enlargement of the head of the probe, or cutting part of it. There is a projection to keep the cannula in its place, so that it may not run up the probe on being introduced. The slightest force is sufficient to disengage the probe after the tube has been introduced fully into the lachrymal canal, in which it is intended to remain instead of a style. The annexed diagram will give a better idea of the instrument. The manner of its introduction is simple. Holding the cutting probe, armed with the cannula, in the right hand, the situation for penetrating the lachrymal sac being ascertained, the skin is stretched by a finger of the left, and the instrument is at once to be plunged down through the duct into the nose up to the head of the cannula, which is to be immediately disengaged from the probe and left there. By this method of operating much time is gained, and less pain inflicted, two requisites which, in every department of surgery, and in all operations, are very desirable.







The cannula ought to be exactly an inch and three-eighths in length. The cutting or trocar point of the probe must be of necessity short, just sufficient to clear the end of the cannula and effect the requisite opening in the integument, to allow of the free introduction of the instrument into the nasal canal. If the point of the probe were to advance far from the cannula, the floor of the nostril would be wounded before the head of the style had arrived at its situation in the angle of the eye. I need not add that the instrument must be made of fine materials, and accurately fitted. Much strength is not required, nor would the limit of the instrument admit of it.

It may be stated in objection, that to plunge down at once from the angle of the eye to the extremity of the nasal channel requires a knowledge of the direction of the canal more accurate than is required by the other operation; perhaps it may; but this is not ground sufficient for its exclusion. Both operations will be better performed by a good knowledge of the relative situation of the parts; but less pain will be inflicted by a slight variation from the right direction in the one now recommended than in the old operation. It is, however, with this exception, free from several of the faults of the other mode, in relation to which it must be looked upon as only a more simple means of effecting the same end.

Whitehaven, April 13, 1828.

ART. V.—*Observations on Gout.* By JAMES SANDERS, M. D. Edinburgh.

THIS is an attempt to give a pathognomonic conspectus of gout. Pathological it is not, since I merely wish to know *what the thing is*, postponing all the correlative subjects of diathesis, predisposition, causes, explanation, and treatment.

My materials are thus arranged:

1. Several cases are fully narrated, and to some of them is annexed the anatomical exposition of the changes, that had, during their progress, been produced in the organization.
2. The different forms or stages of the disease.
3. Such remarks are interspersed as the particular circumstances suggested.
4. The inferences to which the whole seems undeviatingly to have conducted me.*

CASE I.—Mr ———, when about 17 years of age had a severe fever, from which recovery was slow, but apparently complete, as he enjoyed good health till towards the end of 1817, when he complained of indigestion and uneasy feelings in different parts of his body. In 1818, came on acute pains in the inferior extremities, soon followed by swelling and deep erysipelatous redness involving the ankles and feet; these were accompanied with general excitement; and before the inferior extremities were well, he was seized with a sore throat, very distressing, painful, and obstinate. During this his head suffered much, chiefly from confusion in his ideas, and a sense of weight; his eyes became suffused and his vision impaired. There soon supervened a numbness and deficiency of power in the right side, but the right arm annoyed him most, as it obeyed the will very tardily; and he could not hold the pen.

After he became convalescent, the affections of the head, eyes, and right side remained; his memory was deficient; his mind uneasy, dissatisfied, and apprehensive; he was occasionally qualmish, but upon the whole his appetite and digestion were good. This chronic state was sometimes interrupted by the sudden accession of acute headach, throbbing of the temporal arteries, and turgescence of the vessels of the *tunicæ albugineæ*. Practically neither the sanguiferous nor the digestive organs had been spared, but he thought himself worse after every bleeding, whether general or topical; nor did the cathartics succeed better.

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* The following appellations occur which seem to require definition:

Encephalon.—All that is contained within the cranium.

Spinal Cord.—The spinal marrow with its membranes or tunics.

Medullary Elongation includes *crura cerebri*, *tuber annulare*, *medulla oblongata*, and *medulla spinalis.*

Centre of the Nervous System or Nervous Centre means that continuous mass of nervous substance which occupies the osseous cavities of the cranium and spine.

Cerebellic Cavity.—That portion of the skull which contains the cerebellum, and part of the medullary elongation.

Arthritis.—Affection of the joints as connected with and depending on gout.

Arthritic.—Liable to, belonging to, or troubled with, arthritis.

In the autumn of 1825, for the rigid antiphlogistic plan the following was substituted. Night and morning the head was to be bathed with cold water, containing an equal portion of spirits and vinegar, and immediately after well rubbed with a soft dry sponge or towel; then also stimulating liniments were to be rubbed all along the spine, and on the right superior extremity from the scapula to the points of the fingers. His diet to be gently nutritious, exercise in the open air to be taken cautiously, but only in good weather; nor were the natural evacuations to be neglected. If, however, at any time his head should be attacked as above described, his orders were to confine himself to his room, and use the antiphlogistic regimen till the exacerbation subsided, and no longer.

Now and even after, his pulsations were somewhat unequal, never almost in number above thirty-six per minute, and even just after walking, rarely above forty. The heart rolled heavily, but beat synchronously with the arteries; his respirations were from fourteen to twenty.

It is easier to give advice than to have it followed. He seldom neglected the frictions on the right arm, and he regained the power of it so far that he could write easily. He used the tonics for several weeks, and found his health and vigour to such a degree restored, that he considered himself freed from all restraint. The consequence was, that his head soon troubled him as formerly. He recurred to low diet and purgatives, and persevered till a feeling of stupor became permanent, and his general system was nearly as much enfeebled as ever it had been. Conscious that he was rapidly sinking, he, of his own accord, resumed the tonic course, and again his health recruited wonderfully.

This account I had from the patient, of whom I saw little till September 1826, when his general appearance was remarkably improved; but he complained of indigestion, and his eyes were yellow, which symptoms readily yielded to pills containing a small share of calomel, though they were immediately succeeded by transient returns of sickness at stomach, and shifting pains in the loins and extremities. I told him that I now suspected gout more strongly than ever, and entreated him to recommence and go on with the lavations and frictions. He did so, though not assiduously. On the 22d October following he had an attack of gout in the right knee, ankle, and great toe. Here it continued for a few days, and passed to the left inferior extremity. This paroxysm confined him about eight days. On November 5, he had another bilious disorder followed by gout in the feet. From this time he complained frequently of pains in his feet ; and during the spring of 1827 he was twice attacked with regular podagra. While his feet were affected, his general feelings were agreeable to him ; his mind was comparatively cheerful, and his body active ; he even indulged the hope of ultimate recovery. His pulse, however, never improved ; it continued always heavy and slow. While under the tonic treatment, the painful affection of the head never recurred. He had once or twice a slight throbbing only of the temporal arteries.

This gentleman was often cautioned against damp weather, or getting his feet damp or cold, particularly when he felt pain in them. He was even assured that he might die suddenly from rash exposure, or any unguarded exertion of mind or body ; but either morbid apathy or natural incredulity prevailed, for he proved quite heedless and uncontrollable.

Early in October he had a smart fit of podagra, which kept him to his sofa nearly a fortnight. The swellings all subsided, but his toes were still uneasy. In this state on the 20th, a cold wet day, he went upon some business, and sat in a cold room two hours or more ; came home, and fell down seemingly lifeless. I arrived soon after, and his senses were returning. In a few days he had another fit of the same kind. He was bled at the arm, came to himself again, though not with symptoms equally favourable as on the former occasion. Alarming prostration ensued ; his mind was bewildered ; breathing oppressed ; pulsations hardly perceptible at the temples and wrists, and they seemed to have quite abandoned the inferior extremities. The whole surface of the body was cold and clammy, and deadly so his hands and feet.

A cap blister was put on the head, sinapisms on the breast, and on the extremities from the elbows and knees downwards. Antispasmodics were administered internally. In a few hours the arteries beat distinctly about twenty-five times per minute at the temples and wrists, and moderate heat was restored to the superior half of the body ; but the mustard was kept to the inferior extremities full twenty-four hours before rubescence was induced, and then heat and pulsation returned together. After this escape he recovered considerably, and was as careless of himself as ever.

In the beginning of January 1828 he encountered his last attack of gout, which seized the right, and in two days after the left foot. His head became easy, his mind lively; the beats of the arteries rose from 36 to 38 and 42 per minute; the erysipelatous swelling gradually increased, was very painful on the 5th and 6th days, and then gradually declined. On the evening of the 11th the feet, free from pain, were slightly œdematous. He said that he had had some vertigo in the forenoon, which was entirely removed by taking food. His pulsations were now about 50, weak and irregular. I replied that I neither liked the vertigo before dinner, nor the total absence of pain in his feet, and advised him to have mustard applied to them and to his head. After I left him he amused himself for more than two hours, got up, and walked about with uncommon ease and spirits. " I never," said he, " felt myself better. I think I may enjoy myself this one night, and to-morrow I will use the Doctor's prescriptions." At nine next morning his daughter asked him how he had passed the night. He answered, " Very well indeed." She left him, and in three hours after he was found on the floor by the side of his bed, dead.

No noise of falling had been heard; no sign of convulsion, or spasm, of bruise, or injury, was discovered on his body. He lay at full length with his face downwards; his countenance was blue and swollen; but these appearances went off when he was laid on his back. From every circumstance there could be little doubt that life had been extinct at least two hours.

Dissection.—Twenty-four hours after death, 13th January 1828.

General appearance.—Plump, and rather tending to obesity.

Head.—Skull dense, of unequal thickness from the temporal bones backwards, grooved internally in the tract of the meningeal arteries, strongly adhering round the corona to the dura mater. Serous and gelatinous effusion on all the surfaces of the cerebrum and cerebellum. When the encephalon was removed, serum and blood flowed through the foramen magnum, and the blood continued to flow copiously, as is usual in such cases. Cerebrum, cerebellum, tuber annulare, and medulla oblongata, all much softened. The basilar artery was enlarged, exhibiting progressive ossification, which appearance pervaded the circle of Willis, and the vessels in the fissuræ Silvii; all the other vascular tubes seemed attenuated, soft, and fragile. There were red patches of small turgid vessels on the medulla oblongata and corpora quadrigemina, on the roots of the second, fourth, eighth, and ninth nerves. The optic nerves were smaller than usual, and in the third ventricle there was partial cohesion of the thalami; all the ventricles were full of water. The plexus choroides in different parts imitated hydatids, from limpid serum distending its cellular membrane. On the interior surface of the lateral ventricles some blood-vessels were conspicuously ramified, as is common when water is contained in those cavities; but no distension any where of the larger vessels, and the mass of the brain was as free from any vestige of redness as if the blood had been withdrawn, and the heart had become unable to furnish any supply. In each hemisphere, from about the centre of the middle lobes forwards, were small bullæ or cysts full of a yellowish fluid, seven of these were counted, four on the one side and three on the other; the cineritious substance surrounding each bulla was morbidly dark and losing its consistency. Though both hemispheres were diseased, yet the right had suffered more than the other.

Spinal canal.—Dura mater in general sound. As soon as it was slit open, turgid vessels of a vermilion colour were seen on the cervical and lumbar portions of the spinal marrow, and some solitary red vessels from these diverging along the nervous cords. On the arachnoid coat in the lumbar part appeared minute ossifications. The substance of the spinal cord, like that of the brain, was very soft and nearly bloodless. The sinus venosi of the canal were full of dark blood,—an occurrence presented in almost every instance of sudden death.

Thorax.—Lungs sound; strong cohesions on the right side between the pleuræ. Heart a little enlarged, its cavities full of dark fluid blood; the parietes of its right ventricle were thinner, and of its left thicker than it should have been.

Abdomen.—Spleen a little too large; left kidney a little smaller than the right, both too dark in their cortical substance, and the pelvis of each contained a yellowish clammy fluid. *Cætera sana.*

Remarks.—The history and the anatomical appearances just detailed give a nosological view so much the more interesting, that the case is almost a complete specimen of this genus. The malady exhibited itself first in the inferior extremities and afterwards in the head, scarcely sparing in its ascent the functions of any intervening part. An instructive contrast is furnished when the arthritic die of some superinduced or incidental misfortune; in them are disclosed the primary limits of gout, as if accurately circumscribed. Where the inferior extremities are chiefly attacked, the lumbar, but where the superior extremities, the cervical, portion of the spinal cord shows the peculiar condition connected with the paroxysms.

Convinced by ocular demonstration, it is many years since I taught, that the centre of the nervous system is mainly concerned in arthritis, and in a great number of other corporeal calamities; but in none is the dependence of external upon internal motions more clearly evinced.

It seems not improper in this place to admonish the practitioner, that opening a body, and seeing that one or more of the viscera have suffered, affords little information, and no satisfaction. To detect the origin, to trace the sequence, to perceive how any one peccant organ influences the rest, to discriminate among conflicting results, to have a mental retrospect, to devise from concentrated intelligence, the means of counteracting the causes and of restoring health, is the labour and the delight of the pathologist; and he who has not undertaken that labour and felt this delight, were he as profound in general philosophy as Bacon, in astronomy as Newton, in ancient literature as Porson; had he read all the books from the days of the mythological Hermes to those of our modern visionaries, is nevertheless an empiric in medicine.

It was suggested that the example already given comprises what more or less occurs, wherever chronic gout has prevailed; nor will this opinion be invalidated by the cases next to be related, from which it also appears, that by whatever means, specific or dogmatic, according to whatever method, be it of Sydenham, Cullen, or Brown, gout is treated, it almost with equal pace proceeds to the same kind of termination.

Case II.—A gentleman, about 64, of strumous habit, rather tall, and inclining to obesity, had, the last third part of his life I believe, been afflicted with gout, and had long taken, by the advice of his medical attendant, the *eau médicinale* very freely during the paroxysms. This drug induced sweating and copious dejections, followed by cessation of pain. He was liable to indigestion, accumulation of bile, and palpitation, from which last symptom it was inferred that his heart was diseased, and the aortic valves ossified. I first saw him professionally in the spring of 1814. He was despondent, complaining of vertigo, and even some degree of stupor; the joints of his extremities were stiff, and his voluntary movements all feeble and languid. He had not for some time been disturbed by the palpitation; the pulsations were now synchronous at the heart, temples, wrists, and ankles, in number between 60 and 70 per minute; though much annoyed with flatulency, his appetite was tolerably good; his respiration was seldom uneasy, and he could lie on either side; his abdomen was tumid, without any perceptible fluctuation; his urine in the usual quantity, and bowels regular, or readily answering to gentle aperients.

Tonic bitters and stimulating frictions were prescribed, and he was advised to take no more of the *eau médicinale.* His feelings were in a short time alleviated, his mind enlivened, and all his actions more at his command; but on the first recurrence of pain in his feet he could not, and afterwards would not, abstain from the *eau médicinale.* About the beginning of September 1824 he seemed feverish and unhappy. He gave no account of his feelings more than that "he was not as he should be." On the morning of the 11th, he complained that he had passed a restless night, and that his head was confused, adding, that "he was tired of all medical interference." That day he transacted his usual business; and next morning, being much better as he thought, he congratulated himself "on having out-witted the Doctor." He went about three quarters of a mile to a tax-office, and while paying his taxes, fell in an instant dead by the side of the counter.

Body examined 13th September.—*Head.*—Skull thick, grooved internally in the tract of the meningeal vessels. Serous effusion over all the surfaces of the brain, and surrounding the medulla oblongata. From two to three ounces of clear fluid in the ventricles; the longitudinal, lateral, and all the minor sinuses full of dark blood; the vessels also on the cerebrum and cerebellum, the vena Galeni and its branches, so far as they could be traced, the basilar vessels, and those of the circles of Willis and Ridley, all turgid with dark blood. Patches of minute vessels about the nates and testes, and on the medulla oblongata, of a purple or deep red colour. The choroid plexus partly purple and partly blanched, and its cellular tissue distended with serum. The masses of the cerebrum and cerebellum were bloodless, and so soft that their structure would not admit of distinct demonstration. When the encephalon was removed, fully a quart of dark fluid blood escaped through the foramen magnum.

Spine.—The internal substance of the vertebræ was of a dark purple from vascularity; the sinus venosi of the canal were dark and turgid; sero-gelatinous deposition surrounding the dura mater, most copious in the lumbar portion; the dura mater of a dull brown colour along the cervix and loins; slight serous effusion within the dura mater. The anterior and posterior vessels of the spinal marrow very much distended and rather dark, and such distension occupied most of the surface of the spinal marrow, about the middle of the cervix, and from the ninth dorsal vertebra downwards. Many turgid vessels were likewise continued along the nervous cords, particularly of the cervical portion, and of the cauda equina. The substance of spinal marrow was much softened, and here and there variegated with real vessels.

Thorax.—A small quantity of serum in each cavity, as also in the pericardium. The heart and descending cavæ nearly empty. Blood fluid, but there were small coagula in the auricles.

Abdomen.—Some serum effused here also. Liver a little increased in size, and of an irregular yellow colour; its internal structure resembled granite, and was unequally indurated. Spleen too exceeded its usual dimensions, and seemed as if composed of grumous blood. Prostate gland considerably enlarged. *Cætera sana.*

Case III.—I knew a physician who prescribed the *eau médicinale* freely, giving as his reason one most cogent with the patient, " that he himself derived the greatest benefit from it." He no doubt took it as liberally as he prescribed it; nor was he averse from the assistance of opiates, or the exhilaration of strong liquors, but all the misery of atonic gout at length overwhelmed him.

Case IV.—In the spring of 1812, I was called to a gentleman, about 45 years of age, suffering the most excruciating torture from gout in both feet, and many years he had been visited by such attacks and of long duration, till some one advised him to try the *eau médicinale.* This drug, taken according to the printed direction, astonished him; it excited commotion in the stomach and bowels, with copious perspiration, bilious dejection, and inexpressible relief, followed, however, for some time by great languor and debility On this and another occasion the *eau médicinale* was dispensed with, but he complained that relief was not so speedily obtained, though he confessed that he was neither so exhausted nor so infirm afterwards. He was of a convivial disposition; rich viands and generous wines were the gods of his idolatry. For a year, however, or a little more, though he could not in extreme pain resist the specific, yet he adhered to moderate dietetic regulation, and his paroxysms were fewer and milder, but he could no longer endure this restriction. He declared that " he would rather die than have life prolonged upon such terms." The paroxysms returned more frequently and more severely, if possible, than ever. From this time the patient ministered to himself. By the year 1815 the paroxysms were nearly subdued, and so were the faculties of his mind and body. He understood what was said to him, and distinguished one person from another; so far his intellect was sound. His vision was much impaired, and so were his voluntary movements. In this sad plight he lingered two years more, and then died suddenly.

Case V.—Mr ———, an innkeeper, and *bon vivant*, a man of the kindest disposition, but irascible, had been visited for many years at the usual seasons by gout, chiefly in the inferior, but sometimes in the superior extremities also. Anorexia, lumbago, and piles were almost his daily attendants. He had borne vicissitudes like a philosopher; he enjoyed himself when he could, and often indulged more than he ought to have done.

When gout threatened his extremities, he always relied on the *eau médicinale.* It never failed to afford him speedy relief, and to shorten the paroxysm. I told him in 1820, that the use of this supposed antidote would, in no long time, bring on apoplexy or palsy. Even then indeed his limbs were enfeebled, and his speech and vision impaired. He complained of his flaccid virility; for, said he, "I am not above 60!" The warning which I gave him, made some impression on his mind. He endeavoured for a while to live more moderately, and never again took the specific so profusely; but still when in great agony he applied to it.

Early in the morning of 24th July 1824, he became suddenly senseless, speechless, motionless. The previous night he had made copious libations to Bacchus, and an unusually brilliant display in his own kind of oratory. He had never in his life drunk more, vociferated more, been more happy, or carried to bed more completely overwhelmed with sopor.

When I arrived I learned from his eyes that he knew and heard me. He made some vain efforts to speak; his breathing was heavy and slow; his pulse a little accelerated, irregular, and feeble. The surface was in general cool, the extremities cold, and on his forehead a clammy sweat. Aware of his habits, I ordered him a little brandy; he took it, showing no palsy in the willing organs of deglutition. In about half an hour Mr Liston came to my assistance.

The first day his treatment internally was rather antiphlogistic, while externally friction was assiduously employed. After this he was allowed wine moderately, and nutritious food in a liquid form, to which in a day or two tonic bitters were added. Gradually the voluntary muscles regained their capability, and his speech improved. He began to complain of severe pains all along his extremities; but we made no change in our prescriptions. In about ten days the gout appeared in tremendous force from the elbows and knees downwards. His mind resumed its wonted activity, and his articulation or pronunciation became much as it was before the apoplectic attack. The limbs, where affected, continued red, swelled, and painful for several weeks; and on the decline of these symptoms he was ordered a little solid food once or twice a-day, according to his appetite, and a little brandy, particularly when he felt uneasy at stomach; and all the time he had anodynes in the evening. Now locomotion was restored, though not so completely to the right side; and of the right hand he had still no use. He lived by rule; nor were the frictions and occasional application of sinapisms ever omitted. In two months from the attack he was brought to temperance, air, and exercise in the country. Having regained health and vigour, he returned to town, business, and old habits. He continued, however, tolerably well till September 25, 1825, when he got mortally intoxicated. Next day he purged himself severely by taking saline laxatives; and on the third day supervened the most complete atony. It was not palsy, but almost total inability to speak or to move. His pulsations were pretty regular, about 80 per minute; heat of skin natural. He could still take food, and mild aperients readily operated. He knew all those about him, and seemed quite sensible of his situation. All medical efforts were in vain. He died on the 22d October.

Remarks.—It happens that in these cases the *eau médicinale* holds a conspicuous place; but all the specifics for this disease hitherto extolled, though differing in other respects, resemble one another in this, that they alleviate and subdue the attacks of the regular, while they accelerate the transition into the atonic gout. In confirmation I might appeal to the records of medicine; but I trust that one or two instances more will answer my purpose.

About the middle of the last century a prescription known from, and probably before the time of Galen, was introduced into England by the Duke of Portland, and hence obtained the name of the Portland Powder. Its chief ingredients were the Aristolochia rotunda and gentian root. Dr Cullen in his practice of physic says, " In every instance which I have known of its exhibition for the length of time prescribed, the persons who had taken it were indeed afterwards free from any inflammatory affection of the joints, but they were affected with many symptoms of the atonic gout, and all, soon after finishing their course of the medicine, have been attacked with apoplexy, asthma, or dropsy, which proved fatal."

The author of the theory of excitability tells us somewhere, that the relief afforded him by a large dose of opium, taken when he suffered the most exquisite agony of gout, forced upon his observation not only the stimulating properties and paramount utility of that substance, but inspired him with the idea of his peculiar system ! What the results were of his practice his own case will best show. Case VI.—Dr Brown was of an ardent disposition, and his genius of no ordinary mould. He had many admirers ; but vanity and improvidence involved him in difficulties inextricable. Conviviality, inebriation, adversity, and gout occupied one-half of his life. Whenever he dreaded or determined to subdue a paroxysm, whenever, from any cause, wretched, he took immense doses of laudanum. " Nemo," dixit ille, " opiato sumpto sibi mortem conscivit, aut unquam conscisset."

On the 6th October 1788, at his house in Golden Square, London, he delivered a lecture with much animation and vehemence. In the after part of the day his face, eyes, and eyelids were observed to be turgid, and his cheeks unusually flushed. In the evening he swallowed a copious draught of laudanum. Between five and six o'clock next morning he rose ; walked across his apartment ; saw it was too early to rise ; returned to bed, fell into an apoplectic sopor, and expired in a few hours. *

Remark.—Novel doctrines upon an emergency will be adopted in practice even by their most strenuous opponents.

Case VII.—About twenty-four years ago an elderly gentleman, addicted to rich viands, potent liquids, and the gout, was seized apoplectically. Two eminent physicians, declared enemies of Brunonianism, attended. Sorely perplexed, that, in defiance of depletions and prohibitions, bad run rapidly into worse, they ordered that he should have glasses of brandy repeated at very short intervals. When they met again, finding the patient surprisingly better, they prescribed an opiate, congratulated the family, and departed. He did not neglect the brandy ; and next morning he was as lethargic as ever. They regretted the stimulation, bled him profusely, and enjoined diluents. Once more his mental faculties revived,—but to cease for ever in a few hours.

I recollect well the conversation which ensued between the learned practitioners. "Is it not strange," said the one, "that means so opposite in their nature should, at least for a short time, have produced the same effects?"—"Have I not often told you," replied the other, "that our art, except in a few simple instances, is altogether a deception, even to ourselves. We very seldom know either what we are doing, or what we ought to do." I believe, however, that morbid anatomy has, within these few years, done much to remove the opprobrium then so just and so candidly admitted. The specious generalizations which ruled medicine overruled intellect, benumbed the practitioner, and retarded the science. The British pathologists are delivering themselves from this thraldom, while those on the Continent of Europe, with all their boasted advantages, are forging for themselves anew the chains of hypothesis. Dædalus, as the poets feigned, constructed a labyrinth in which he and his offspring were imprisoned. This is an ingenious allegory, most aptly representing the infancy of knowledge.

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* Life of Dr Brown, by his son, William Cullen Brown, M. D. p. 144, &c. London, 1814.

Case VIII.—Twelve years ago I was called to an honourable baronet, about 65 years of age. Seventeen or eighteen months previous, apoplexy had come suddenly upon him. Under copious venesection, &c. the head was relieved, but paralysis of the right side and its extremities remained. This gentleman had been subject to severe paroxysms of gout and politics for many years. When I saw him his inferior extremities were enormously swelled with water, nor was he quite free from hydrothorax and ascites. I remarked to him that his arteries beat very unequally. "That," answered he, "gives me no concern. My pulse has been unequal and intermitting as long as I can remember. Dr Monro *Secundus* warned me twenty years ago that my heart was diseased, and gave me many precautions which I never attended to."—"But my health," continued he, "is improving daily, though slowly. I am assured that the swellings, though they are increasing, will depart in proportion as my strength returns; and even now I am able to move a few paces in my chamber with the help of my servant. What I wish to consult you about is my little finger here; it is so contracted that I can make no use of it in attempting to play on the flute." In reply, Your health, Sir, does not appear to me so safe as you imagine. Telling you that returning strength will put away the swellings, is just the old proverb, "that you will get well as you grow better." In my opinion, two legs are of much more value than one little finger. The same means that will remove this dropsy will at the same time invigorate your general system; and this is the best method even of affecting your finger, though I would not flatter you respecting it; for such contractions are seldom, if ever, entirely removed.

We moderated the rigour of abstinence; commenced with diuretics, tonics, and frictions; in a few weeks the swellings had disappeared, and he could walk without assistance; all was promising, except the intractable finger. While he thought himself doing so well some one represented to him that he was recovering too rapidly, and in consequence he resumed his starving course, and went to the country. In a short time, however, his dropsy returned, and at last apoplexy again laid him prostrate. I was sent for, but two other medical gentlemen were there before me, and had determined to abstract blood profusely from the temporal arteries. I dissented for these reasons: that the preceding state of his health, his atonic gout, his serous effusions rendered it probable, that even now effusion had occurred within the cranium; and if it had not, such abstraction would insure it, and deprive the patient of any chance that he might have.

Forty ounces of blood were taken; great relief followed; sanguine hopes were indulged;—in eight days he died.

Dissection.—The brain was deluged with water, all the ventricles very much distended, and the whole cerebral mass might be said to be deliquescent. There were such gelatinous depositions, and unequal vascular turgescence, as are so often observed deluding the tyro in pathological researches with the *ignis fatuus inflammationis.*

The heart was hypertrophic, the valves of the aorta partly, and the orifices of the coronary arteries completely, ossified; the interior surface of the aorta also exhibited ossific formations in different stages.

Nothing else remarkable.

The spinal cord was not inspected.

Mr —— about 70 years of age, of middle size, short neck and corpulent, lived well, was naturally active in mind and body, took much exercise, and generally enjoyed vigorous health; though latterly he was dyspeptic, and troubled with what were called bilious headachs.

On Wednesday, 3d December 1817, he had entertained a party at dinner, and in the evening, while playing a rubber at whist, he was seized with a shivering fit, which obliged him to go to bed. He complained of pain in his right foot and leg, and in the morning these parts were swelled, and invested with a rosy redness. Slight fever was present. On the supposition of inflammatory erysipelas he had cathartics and diluents, but during eight days obtaining no alleviation, he became impatient. A celebrated physician was called in, who commanded venesection to be performed. On the morning of the 10th about 15 oz. only were abstracted ; prostration of strength ensued, pain ceased ; but in the evening gangrene occupied the limb, torpor the head ! On the 12th I saw him. He lay stretched on his back at full length in bed without pain, and incapable of fear. From about four inches below the knee the limb was one black, tumid mass, the great toe enormously swelled, and covered with unseemly vesicles. His pulse was hardly perceptible ; his respiration slow and calm. Though stupified, when spoken to he answered distinctly. His eyeballs were a little tumid, and the eyes had a leaden, heavy, sluggish motion, when he directed them towards any object.

I told his family that no hope remained, and that medical interference could avail nothing. On Sunday the 14th, at 3 P. M. he ceased to live.

Remarks.—It appears that gout of every form, and under every variety of treatment, proceeds more or less steadily through a determinate course. It may be a question, whether, if left to itself, the phenomena would still be the same? I think this may be answered in the affirmative. From Sydenham to Cullen the *methodus medendi* was such, that it could neither subvert the natural, nor counteract the superinduced tendencies of the animal economy. Now that long period has furnished no instances in which the arthritis did not pass into the third stage, that of atonic or asthenic gout, nor any in which the disease, whether regular or irregular, did not exhaust the centre of the nervous system.

THE DIFFERENT FORMS AND STAGES OF GOUT.

Hitherto our attention has been principally directed to that form generally called the atonic, which in my opinion should rather be considered the third stage of gout. It bears the same relation to the regular arthritis that passive does to active inflammation, or chronic to acute ophthalmia.

It is of great importance also to be aware, that gout often creeps on insidiously ; sometimes imitating the atonic form, and not unfrequently so equivocal are its symptoms, that they are apt to deceive even the most skilful. No organ is so liable perhaps to its invasion as the stomach,—indigestion, acidity, and uneasiness are complained of, coming on and going off without any assignable cause ; and not prevented or removed by endeavours to improve the diet, regulate the bowels, or strengthen the digestive organs. The liver is also accused, and bilious evacuations are followed by almost instant alleviation. Pains fleeting or fixed in the ribs and loins ; sediments in the urine, amorphous or crystallized ; the heart palpitates ; the head is uneasy; the bowels are variable; nor in those particularly of 40 years and upwards, must we overlook the repeated occurrence of dysuria. What are here specified are the accidents which arise either separately or conjointly; but it were equally vain to attempt the description of the transitions between the external and internal parts, as to enumerate all the other multiform, erratic, and abnormous occurrences. Such intruders often vanish as if by enchantment; the person relieved becomes at once cheerful and happy, while those about him look upon these alternations as equally groundless and imaginary.

This uncertain state may continue for months or years, when at length gout appears in what is supposed to be its generic complement; and then, notwithstanding the tortures of the paroxysm, the load of misery that is thrown off is astonishing. The patient now knows his disease, and flatters himself that nature has supplied the remedy; the fit introduces months of good health, and he welcomes the next vernal or autumnal recurrence as the pledge of security and safety, little dreaming that the paroxysms will return at shortening intervals; that they will involve all the extremities, thickening, stiffening, and disabling every joint; and that, abating in their fury, they will leave the very fountain of life irretrievably deteriorated, thus ushering in the complete atonic gout, the fatal termination of which, though often accelerated, has never yet been averted.

It is not to be inferred from this sketch that the preparatory or premonitory efforts of gout always, by ultroneous concentration, declare their nature in the extremities. It is impossible indeed to predict where the formidable assault is to be made. I have seen the chest seized as if with acute pleuritis; the heart, carditis; the abdomen, peritonitis; the stomach, gastritis; the throat, cynanche, or dysphagia; but none of these so frequently nor so variously as the head; and countless are the instances of sudden death from the impetus against the brain. What happens in the feet we have all witnessed. Now let us reflect what must be the consequence of a sudden yielding, filling, and distension of the vessels within the cranium! *Procumbit humi bos.* It is, people say, a great hardship for any one to have died without assistance. Be that as it may, I have more than once had reason to ascribe the preservation of life to this circumstance, that the paroxysm subsided before the physician arrived. Since Stahl, the controversies and disputations have been resuscitated about trusting to the powers of nature, which, in modern Gallic phrase, is the *Medicine of Expectation.* But true it is, that he who does not study when and when not to wait, is more dangerous to mankind than disease itself.

The fact that gout often proves fatal without having assumed any decisive character is not peculiar, for the same thing is observed in other diseases. How many have there been cut off in the preparatory fever of small-pox? The disposition, indeed, to the definite course, is so evident, that those circumstances and accidents, which so often interrupt it, without invalidating the rule, demand serious investigation.

Nor in this disease, which is as capricious as hysteria itself, are we always to expect a well-marked or fixed attack upon any of the organs; and as little are we to believe, that, should an attack be made, it must be sthenic or inflammatory. On the contrary, the head may become affected with dulness or stupor; the heart with languor and irregularity; the respiration may become heavy or asthmatical; the functions of the abdominal viscera disturbed and feeble; and the extremities may be struck with paralytic debility.

And this sudden loss of power, whether partial or general, is not peculiar to gout. I have seen the same thing in the first stage of the common continued fever. It is well, however, when reaction supervenes, and the local affections change from the torpid to the acute; but torpor succeeding activity is always unfavourable.

The premonitory symptoms and occurrences are here the more solicitously dwelt upon, that they are the most frequently mistaken; while it is during their prevalence alone that our art can be most usefully and efficiently exerted. But if the real atonic state, which I afterwards call the subsecutive stage, has been established, our duty is limited to the protracting of life and the alleviating of misery.

Sauvages affirmed that there was but one species of gout, and Cullen is inclined to agree with him, though he thinks that the following varieties deserve attention, viz. the regular, the atonic, the retrograde, and the misplaced or aberrant. According to him, the sign of the regular form of gout is "pretty smart inflammation of the joints, which continues for some days, and gradually recedes, with swelling, pruritus, and desquamation of the affected part." The other three appellations he includes under the general epithet irregular; and so he might, for they designate no distinct varieties, but merely symptoms which occur indiscriminately in all the unsettled forms of this disease. As was the custom of the age in which he lived, he attended more to what had been written than to what nature dictated,—to disease more as a matter of history than of daily observation; consequently he perceived no difference of indication between those symptoms which preceded inflammatory local action and those which succeeded. When what he called the regular form was not assumed, he pronounced the disease to be irregular, and then treated it more or less as of the atonic description; nor was his use of stimulants, particularly of brandy, less liberal than that of his antagonist, Brown. Disorder of function and change of organization made no difference in his estimation. On such views no appropriate scheme of practice could be formed, and the mischief done must have been incalculable.

The account of gout just given seems to expose three states or stages, which may be called the preparatory, the regular, and the subsecutive. The first and third, though mightily different from, yet resemble one another in their delusive and wandering habits; but the second, though not exempt from shiftings and transitions, is upon the whole distinguished by its uniformity, as well as by its effects upon the joints.

We should reasonably suppose that the parts primarily disturbed would be differently affected in each of these states.

The preparatory cannot be connected with any great or permanent lesion of structure, since it terminates in the regular,—a complete paroxysm of which shall be followed for months, or even years, by the full enjoyment of health. Nor can any ordinary fit of the regular have produced great or extensive lesion, since, in consequence of it, all the functions or faculties are renovated. But when the paroxysms lengthen and recur at shortening intervals—when they vacillate in degree and mode—when there is shifting from one part or organ to another, external or internal—when the brain, the heart, the lungs, the liver, the stomach, the bowels, the kidneys, separately or simultaneously, evince disorder—when cramps, spasms, and pains, with stiffened joints and general asthenia, prevail—when vertigo confuses, and gloominess and timidity take possession of the mind—when the fingers or toes are contracted or powerless—when vision and speech are impaired—when a leg or an arm is paralysed—when fainting or apoplexy overwhelms,—without any claim to superior sagacity, you may suspect that more deep impressions have been made than during either of the preceding stages.

Conversant in structural deviations, use your scalpel, and your suspicions will be converted into certainty. When in the first, or early in the second stage, life has been intercepted by seizure within the cranium, the apoplexy is sanguineous; there you see red turgid vessels, red puncta, the nervous centre firm and its structure sound; from the corpora quadrigemina to the cauda equina, red turgid vessels wandering here and there along the nervous cords and filaments, and the serum effused very scanty. When in the advanced second stage the apoplexy is less decidedly sthenic, the internal plate of the skull is more deeply grooved; the turgid vessels are generally of a darker hue; the nervous centre is less firm, and red puncta fewer; the quantity of serum is pretty copious in the ventricles, and in the osseous cavities containing the cerebellum and spinal cord. If the respiration has been asthmatical, turgid vessels are crowded on the medulla oblongata, and extended along the nervous cords and filaments. The same appearances occupy the cervical portion of the spinal marrow with its nerves, if the superior extremities; and the lumbar portion with its nerves, if the inferior extremities, have been frequently or recently subjected to the arthritic domination.

When in the third stage the inner plate of the skull is very deeply grooved, the meningeal vessels are turgid; the dura mater is partially thickened; strong adhesions are found between it and the arachnoid tunic, as also between this, the pia mater, and cerebral substance; serous effusion in great quantity on all the surfaces of the cerebrum and cerebellum, as also in the ventricles and cerebellic cavity. The superficial vessels are irregularly turgid; the vascular tubes are either flaccid and attenuated, or partially rigid and thickened, and frequently there is compression from coagulated or even fluid blood; the cerebral substance is bloodless, has been mollescent, and in many places degenerating. In the hemispheres there are small cavities or sacs filled with yellowish serum. Within the canal of the vertebræ, serum surrounds the dura mater, and within that covering the fluid is equally abundant; the bodies of the vertebræ are in their cancelli spongy, and of a deep purple colour; the venous sinuses are replete with dark blood, as are the vessels passing through the lateral foramina; and the envelopes of the cords of the nerves are coated with a bloody gelatinous effusion. The arteries of the spinal marrow, anterior and posterior, are salient, and from them a net-work of distended vessels surrounds the medullary elongation. This turgescence is always most conspicuous in the cervix and loins, but in the cervix it is seldom that the blood is not somewhat of a florid redness, though elsewhere it is of a dark or venous complexion. Many of the nervous cords emanating from the spinal marrow, and even their individual filaments, are accompanied with turgid vessels; and what is worthy of attention, turgid vessels often attend their seeming roots to the very centre of the medullary substance; nor should we overlook the ossific depositions so often observed on the arachnoid coat.

The organs of motion, voluntary and involuntary, have lost their firmness; the viscera of the thorax and abdomen exhibit a great diversity of morbid change, though perhaps the heart, with the larger vessels, the liver, spleen, and kidneys, are most frequently perverted. Among the results detailed, it were not easy to select those that are to a certainty diagnostic. We have gained, however, this decisive point, that, whatever else may be sound or unsound, the spinal cord and its appertenances are never, in any instance of gout, free from the well known effects of morbid action. It is not sufficiently understood, besides, that the centre of the nervous system is in every commotion, partial or general, the part most powerfully attacked; but hence it is, that gout has both morbid symptoms and anatomical characters in common with an almost infinite variety of disorders; and that of this centre there is one portion, viz. the medulla oblongata, upon which the continuance of life immediately depends; but wherever disease begins, hither it must come before the vital functions cease. Disturbance or failure in the organs served from the eighth, ninth, or accessory pair of nerves always introduces the fatal event, and so far gout is related to all other mortal diseases.

Concluding remarks, &c.—We have now viewed this severe affliction of the opulent, the luxurious, and the great, under its phases in the living and in the dead; and though dissection has not followed every one of the cases, yet so closely are they allied in signs, in symptoms, and event, that we cannot doubt but they would all have manifested an equal correspondence in their anatomical relations.

But what is detected after death is not precisely the same in any two bodies. To arrive at any definite conclusion, therefore, we must distinguish between those morbid changes which are essential, and those merely incidental. It is only by proceeding thus, indeed, that anatomy can shed any clear light on the phenomena of disease. In this nice discrimination we shall never fail, I believe, of success, if guided by the following plain maxim. Things which may, or may not, co-exist, not being necessarily connected, are merely incidental, while those constantly together are exclusively to be received as essential. According to this rule, then, let us try what is essential in gout. There is no part that has not been observed in one sound, and in another unsound, except the centre of the nervous system. In it morbid change is constantly present, and the extension and danger of the disorder are in direct proportion to the extent and degree of this morbid change; the affections, therefore, of this centre are the essential.

Having come to this centre itself, we do not find that it is ever all equally affected. Often, on the contrary, the greater part of it is entire, indicating that the disease is primarily local. This locality varies with the organs attacked, and there is not one in our fabric which may not be the first to evince its influence. To determine, therefore, in any case, where, in respect of the nervous system, the seat of the complaint is, can be no difficulty to him who knows whence the suffering organ receives its nerves; but with every allowance for anomalies, we have proved, that the internal nisus generally tends to the evolution of the same symptoms in the same parts,—that is, to the production of perfect arthritis. Here, it is to be remembered, that in this the most common or regular form of gout, the lumbar and sacral nerves are the first disturbed, involving the inferior extremities, and often simultaneously the bladder and rectum; next the morbid action ascends, involving the kidneys, the liver, stomach, heart, respiratory apparatus, and encephalon, proving, that though all the parts of the nervous centre may be successively invaded, yet nature points to the inferior portion of the spinal marrow as that most liable; whence, the malignant operation once begun, if not removed, proceeds upwards, and the responding nerves vitiate the functions of the organs which they respectively supply.

Inferences.—All the facts combined seem to establish,

1. That gout has its primary seat in some part of the centre of the nervous system.
2. That in whatever part it commences, it gradually more or less produces morbid change throughout the whole.
3. That it most frequently commences in the inferior portion of the spinal marrow.
4. That, as it extends, the remote organs become disordered in their functions, and ultimately in their structure.
5. That, in fine, gout is primarily and essentially a disease of the centre of the nervous system.

ART. VI.—*Case of Osteo-Sarcoma of the Lower Jaw,* removed by JAMES SYME, Esq. F. R. C. Surgeons, Lecturer on Anatomy and Surgery, &c. (With a PLATE.)

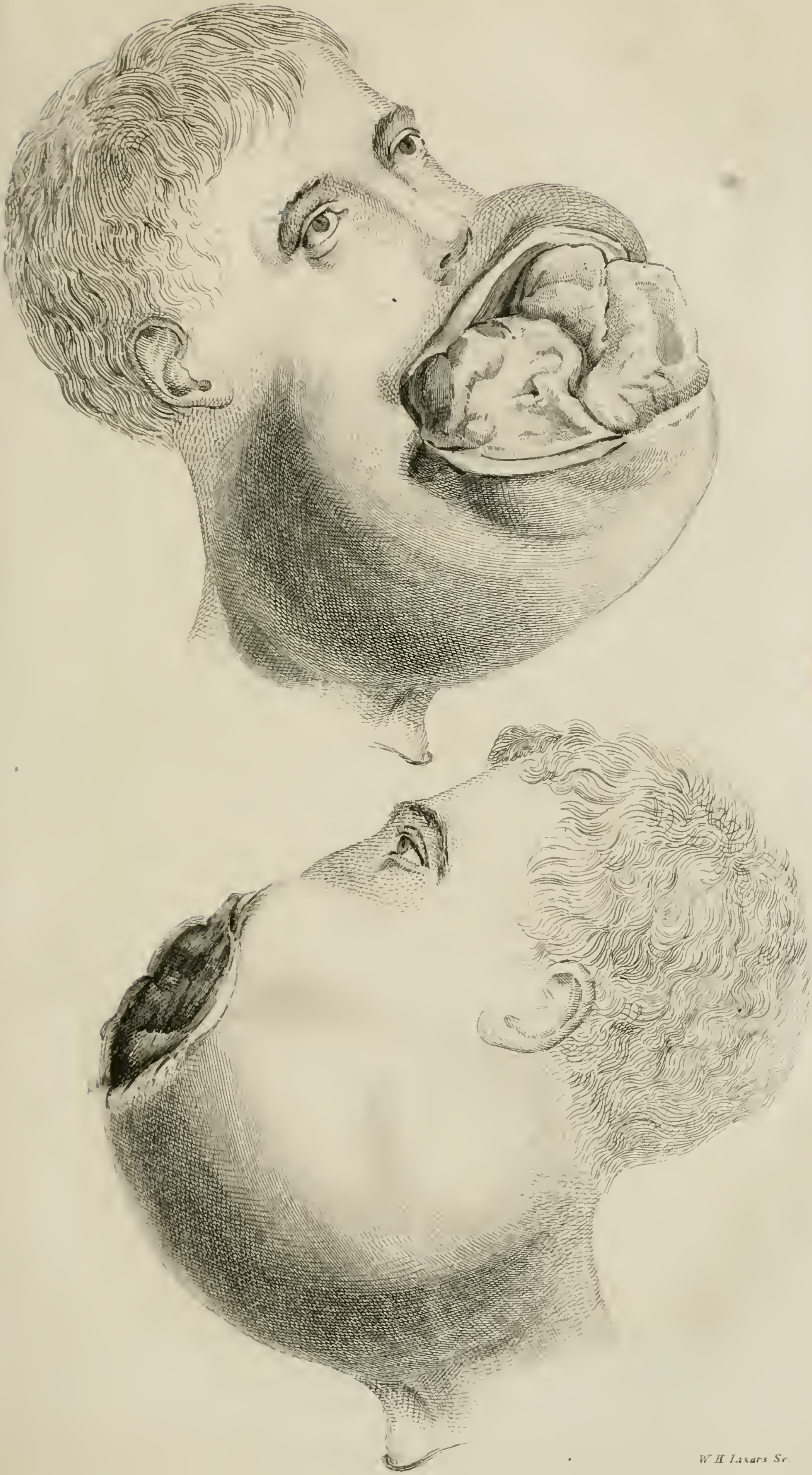
THOUGH excision of the lower jaw has of late years been frequently performed by various surgeons at home and abroad, I flatter myself that the following case will be read with interest, since the tumour which was the subject of it is, I have reason to believe, the largest that has been removed by this operation.

In the beginning of July I was requested by Dr Sibbald to examine a tumour which he was anxious to have removed, provided it could be done with safety to the patient. He told me that, while making a professional visit at Coldstream, he had seen the unfortunate person in question, and learned the following particulars of his case.

Between eight and nine years ago, Robert Penman, then 16 years old, noticed a hard swelling of the gum on the outer

Mr. SYME'S CASE

Edinr. Med. Jour. No. 97. p. 286.



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side of the grinding teeth of the lower jaw. The swelling was not painful, but gradually increased. When it attained the size of an egg, he applied to a surgeon of the neighbourhood who extracted three of the adjoining grinders. It then grew more rapidly, and having at length become so large as a double fist, induced him to repair to the Royal Infirmary of this city, where it was removed, *i. e.* cut off from the bone. The wound did not heal, and the actual cautery was repeatedly applied in vain to make it do so. After remaining eight months in the Infirmary he returned home; but finding the tumour regularly and rapidly increasing, he, two years afterwards, came again to Edinburgh, and consulted a distinguished operating surgeon, who declined making any attempt towards his relief. He went home with the fearful prospect of a certain, lingering and painful dissolution; and it was after *three years and a-half* spent in this miserable state that Dr Sibbald happened to see him. Though the tumour was then nearly three times larger than it was when the patient last quitted Edinburgh, Dr Sibbald felt persuaded that it was still within the reach of surgery, and therefore encouraged the young man to come once more to town, which he accordingly did.

Though prepared for something very extraordinary and frightful, I certainly was astonished at first sight of the patient. The representation prefixed to this paper may give some notion of what mere words are altogether inadequate to express.

The mouth was placed diagonally across the face, and had suffered such monstrous distortion as to measure fifteen inches in circumference. The throat of the patient was almost obliterated, there being only about two inches of it above the sternum, so that the cricoid cartilage of the larynx was on a level with that bone. When the tumour was viewed in profile it extended eight inches from the front of the neck. It completely filled the mouth, and occupied all the space below it, from jaw to jaw. The tongue was thrust out of its place, and lay between the teeth and cheek of the right side. The only portion of the jaw not implicated in the disease was the right ramus and base of the same side, from the bicuspid teeth backwards. The tumour, where covered by the integuments, was uniformly very firm, and for the most part distinctly osseous. The part which appeared through the mouth was a florid, irregular, fungous-looking mass of variable consistence, from which an alarming hemorrhage had occasionally occurred; and for the last three or four weeks there had been almost daily a discharge of blood to the extent of one or two ounces. Notwithstanding the great bulk of the tumour, the patient could move his jaw pretty freely in all directions. With the exception of the disease now described, Penman enjoyed good health. He was a tall, well made, though much emaciated, intelligent young man, and possessed uncommon fortitude.

Having carefully examined the tumour, I undertook to remove it; and this proposal meeting with the approbation of Dr Abercrombie and Professor Ballingall, was, with the assistance of the latter gentleman, carried into execution on the 7th of July in the presence of Dr Abercrombie, Professor Russell, Dr Hunter, &c.

The patient being seated on an ordinary chair, which posture, though inconvenient to myself, I preferred as being most conducive to the prevention of suffocation from hemorrhage during the operation, I made an oblique incision by running a sharp pointed knife through the lip, from the right angle of the mouth to the base of the jaw, where I proposed to divide it, viz. at the second bicuspid tooth, which had been removed the evening before. Having exposed the external surface of the bone at this part, I divided it partially with the saw, and easily completed what remained by means of the cutting pliers. The inferior coronary artery, which Dr Ballingall had prevented from bleeding by compressing it in the lip, was then tied.

I next made a long semicircular incision from the left angle of the mouth, in the direction of the base and ramus of the jaw, and terminating over the condyle. Having secured the facial artery, and two transverse branches of the temporal, I dissected down the large flap thus formed quite to the neck, so as to let Dr Ballingall feel the carotid lying in the muscular interspace, and ready to be compressed if there should be occasion. I then made another curved incision in a similar direction, commencing from the mouth, at such distance above the former as to include a portion of the cheek, which was firmly adherent to the tumour; and having dissected up this flap, divided the masseter muscle, so as to expose the whole external surface of the tumour. The next step was to divide the mucous membrane of the mouth. This rendered the tumour much more moveable, and enabled me to expose the coronoid process, divide the temporal muscle, and open the articulation at its fore part. I had then merely to cut closely round the condyle, and detach the pterygoid, mylohyoid, and other muscular connections.

The operation occupied twenty-four minutes; but all this time was not employed in cutting, as I frequently allowed a little respite, to prevent exhaustion from continued suffering. The patient bore it well, and did not lose more than seven or eight ounces of blood. His breathing was never in the slightest degree affected.

After placing a few folds of caddis in the great cavity left by the tumour, which weighed 4½lbs., I brought the integuments together on the left side of the face, in a triangular form, and retained the edges in contact by the twisted suture. The incision on the right side was dressed in the same way. Two or three turns of a roller were then put round the chin and head, so as to support the relaxed integuments.

The patient made no complaint of any sort after the operation. His pulse for the first two days was about 100, but soft, and gradually subsided to the natural standard. He slept well; had an appetite for his food, viz. beaf-tea and whey, which were introduced into the pharynx through a funnel with curved tube, and performed his excretions regularly. The whole of the caddis was removed by the third day, when the patient sat up, and declared that he felt better than he did previous to the operation.

In concluding this case, I take the liberty of making a few general remarks on the mode of operating.

The patient ought certainly to be seated, since the blood will thus be prevented from running into his throat so as to delay the operation, or even render tracheotomy necessary to prevent suffocation.

There is no advantage in tying the carotid artery previous to commencing the extirpation. I was advised to do so in the case above related, but declined on the following grounds:—1. It is unnecessary, since the only arteries which must and ought to be cut are the facial, some of its branches, and some branches of the temporal. 2. It must exhaust the patient, especially when the tumour throws an obstacle in the way, as in Penman's case, where there was hardly any space left for applying a ligature. Thus, in one of Dr Mott's cases, the patient was so much fatigued, as to require the delay of a day after the artery was tied. 3. It increases the danger, since it cannot be denied that there is always more or less risk of hemorrhage on the separation of a ligature from so large a vessel as the carotid. 4. It is of no use, since the anastomotic communications are so free, that a ligature of the trunk is not sufficient to arrest the flow of blood from its branches. Thus, in Dr Mott's case above-mentioned, the arteries which were cut during the operation required to be tied; and I have heard of a case where the operator, attempting to remove a tumour of the upper jaw, tied *both* carotids, and was still obliged to desist by the bleeding. 5. Any good effect that can be expected from *tying* the trunk may be obtained by *compressing* it after the integuments lying over it have been dissected off or divided.

For sawing through the lower jaw, I am quite sure that the chain saw, though recommended by a surgeon so experienced and judicious as my friend Dr Cusack, is not the best instrument. The one I used has a straight blade six inches and a-half long and half an inch broad, with a straight handle. It will be found very useful in many different operations on the bones. It is not necessary to saw through the whole thickness of the bone. A pretty deep groove being made, the cutting pliers, introduced into use with so much advantage to operative surgery by Mr Liston, easily complete what remains. In this way I divided the jaw in less time than would have been required for passing the chain saw round it.

The external surface of the tumour should be completely exposed before proceeding farther, since all the vessels which ought to be tied may then be tied in the first instance, and a free drain is afforded to the blood which oozes from the small branches. The mucous membrane of the mouth being next cut by a scalpel, carried from the tonsil outwards, the tumour is rendered much more moveable, and the surgeon will generally be able to free the coronoid process from its muscular connections. Should he fail in doing so, he ought to cut it across with the saw or pliers, and then depressing the tumour as far as possible, open the articulation on its fore part; after which he has merely to carry his knife close to the tumour, and divide the remaining attachments.

I think Dr Cusack is entitled to much praise for insisting on the propriety of opening the articulation from before, since a wound of the internal maxillary, or even the temporal is otherwise almost inevitable. Thus Mr Liston, in the case detailed in the last number of this journal, opened the joint from behind, and found it necessary to tie the common trunk of the temporal and internal maxillary,—in short, the external carotid. I do not mean to say that this proceeding was very dangerous to the patient, or very difficult to so expert an operator as Mr Liston. But I think that the great object of a surgeon should be to avoid cutting any thing which it is not necessary to cut. And I think that the patient in this case would hardly have suffered the severe secondary hemorrhage which is mentioned in the relation referred to, if the superficial vessels merely had been divided.

It appears also that in Mr Liston's case the ascending branches of the portio dura were cut, since the patient's eyelids were paralysed. Now this in all probability would not have happened, if the articulation had been opened from before.

P. S.—Penman is now quite well. His mouth is contracted to nearly the natural size, and his appearance is not disagreeable. He is daily improving in articulation, and can already express his wants pretty intelligibly. He has become much stronger, and is thinking of resuming his occupation.

75, *George Street*, 15*th August* 1828.

Art. VII.—*Fatal Case of Depressed Fracture of the Skull, in which the symptoms of compression did not appear till some days after the accident.* By James Wallace, Assistant-Surgeon, R. N.

On sunday evening, July 17, 1825, Charles Easton, seaman of his Majesty's ship Ocean, being on shore at Lisbon, got into a quarrel with some Portuguese soldiers, and received a wound on the head. The fray took place at seven o'clock, but the man was not brought to the ship until half-past ten. I was unable to learn with what instrument the injury had been inflicted, or what were the symptoms which immediately followed the accident. But when he was seen at half-past ten, he was quite sensible, and able to answer questions distinctly. The pupil, the pulse, and the respiration were perfectly natural. The wound in the scalp was about half an inch in length, and situated immediately over the junction of the superior angle of the left parietal bone with the occipital. There was a great deal of puffiness around the wound, with a hardening around the puffiness, which communicated the feeling as if a portion of the bone were depressed; but as this is often a deceptive feeling, and there was no symptom indicating compressed brain, I did not think myself warranted to cut down and examine the bone. I introduced the point of my little finger into the wound, in the hope that thus I should ascertain whether there was depression; and on making pressure with the finger at that time, the man winced and complained a little. But as it appeared to me that the pain he complained of was more from irritation in the scalp, than from pressure on the brain, and as all other circumstances were favourable, I made no further examination, and simply dressed the wound.

That night he slept soundly. At six next morning he rose with the rest of the convalescing patients, went down to his birth on the lower deck to change his clothes, and at eight was in the sick birth seemingly as well as if nothing had happened to him. All Monday he kept equally well till towards evening, when severe headach came on, which was completely removed, however, by a copious blood-letting; and on Monday night he slept again soundly. On Tuesday he was up at the usual hour (6,) but as he had still slight headach, we sent him to bed again, and gave him saline purgatives. Through the day he was easy, and at night slept well. On Wednesday he had not any particular complaint; he was in the birth with the rest of the patients, and we were beginning to forget almost that he had met with a serious accident. But on Thursday morning, although by all accounts he had slept well enough, he was heard moaning; and on being spoken to, he was found in a state of stupor, and delirious, with the eyes suffused and irritable, the pupils contracted, and the respiration much hurried. The wound had been looked at on Tuesday, and presented then rather an unfavourable aspect; now it was in the same state, without any disposition to heal, discharging a thin ichor, and retaining all its surrounding hardness and puffiness. It now occurred to us that there was separation of the pericranium and dura mater from the bone; and to ascertain this, and consequently to apply the trephine, we cut freely down upon the part. On laying bare the bone, we found that it was indeed depressed to a very considerable degree. A portion of it immediately under the wound, in size about the circumference of a crown, was beat in upon the brain full half-an inch, and broken into four pieces. The pieces of bone had their points thrust down upon the brain, while the other ends were still attached to the sound bone, the whole forming outwardly a cup-like cavity. Instead, therefore, of trephining, merely to give exit to matter pent up between the cranium and dura mater, we trephined to raise the depressed bone. Mr Bell, the surgeon of the ship, performed the operation; and on removing the portions of bone the brain again bounded into its place. The dura mater was found injured, and slightly sloughy at a point. The brain itself might be slightly lacerated.

It would be needless to detail particularly the treatment which was pursued from the performance of the operation up to the time of the man's death. It is enough to say, that, by strictly putting in force the necessary measures, all immediate danger was warded off. Three days after the operation he was perfectly in his senses again; the pulse moderate; the heat of skin natural; and the wound of the scalp had healed to about an inch. For three or four days more he did as well as we could have wished; and we were beginning to entertain great hopes of his recovery. But at the end of that time a small sloughy fungus-like substance appeared at the bottom of the wound. At the next dressing it had increased, and speedily it began to tear up the wound. Now too a second substance of the same kind appeared, which increased like the first, while the discharge from the wound became exceedingly fœtid. By and by the greater part of the fungus dropped off, but immediately it was replaced by a new portion, which, again falling off, was as speedily replaced by another. At every dressing there was a portion to come away, and a new portion to supply its place. Under all this the patient retained his senses; but he gradually sunk, in spite of all support; and on Sunday the 7th August, exactly three weeks after the receipt of the injury, and seventeen days after the performance of the operation, he expired.

The above is another case of injury of the head added to the list of those already upon record, in which, although pressure was made upon the brain by bone, yet no symptoms of compressed brain were present—at least in the first instance. It is no unusual thing to hear of patients who have had only a slight depression of the bone having no very bad symptoms, and doing well without any operation. When, as often happens, the depression is merely a dimple in the bone, and when there is indeed no certainty of the internal table of the skull being depressed at all, it is not to be wondered at that the patient should have but little wrong with him, and require but little assistance from the surgeon. But it is seldomer that we hear of a patient—with the bone fractured and comminuted to the extent of a crown, with the fractured pieces thrust down upon the brain full half an inch, with the dura mater injured, and probably the brain itself lacerated,—being found three hours after the accident without any symptoms of serious injury, and remaining for upwards of three days almost free from complaint. This man, although he had headach on Monday night, was through the whole of Monday without any ailment. He was to all appearance as easy and as sensible as those who had received no injury. Although he was on Tuesday ailing a little, still his ailments were by no means severe, or of a kind which would have led us to anticipate the mischief that existed. On Wednesday, it will be recollected, he was nearly quite well; and during all this time his sleep was undisturbed. I looked at him often while he slept, and there was nothing whatever that could indicate an affection of the brain; no stertor, no starting, no hurried breathing, but seemingly the calm sleep of a man in health. And yet during all this time the pressure on the brain which I have described was in existence. There was an injury present which we might have supposed would have kept the patient from the first in a state of total insensibility. In short, there was nothing to point out the serious nature of the injury. That such an injury could have existed without decided symptoms being present to mark it, was certainly more than I could have before believed.

In reflecting upon these statements, we are forcibly struck with the necessity which exists for a minute examination of the wound or part struck in all cases of injury of the head, because it would seem that even in cases of serious injury we cannot take the general symptoms as a certain guide. When we know that pressure, and considerable pressure too, may be made upon the brain without serious symptoms immediately occurring, and when we have seen that those symptoms which are generally laid down as characteristic of compressed brain, such as insensibility, stertorous breathing, dilated pupil, slow labouring pulse, &c. have been in one case wanting, we are put in doubt, and upon our guard, and will be careful to examine minutely the state of the parts, independent of the general symptoms. When the wound is large, it will be easy to ascertain the state of the bone beneath ; but if it be small, or if no wound has been inflicted at all, this is more difficult, and it may be necessary either to dilate the wound, or to cut upon the sound scalp. In consequence of the swelling and puffiness which almost invariably follow blows upon the scalp, it is not so easy as one would at first suppose to ascertain even by careful examination the exact state of the part. Depression will sometimes be supposed to exist when it really does not ; or, on the other hand, to be absent when it actually is present. Therefore, if a doubt exists as to the nature of the case, rather than leave it undecided, I think we ought to cut upon the part and examine it perfectly.* Even when no bad symptoms are present, yet, if we are told that the blow has been given with such violence, or with such an instrument, as to render it even *probable* that depression has taken place, the examination must be such as to satisfy us completely. It is best always to err upon the safe side ; it is best to be particular even upon what may turn out an unimportant case.

The practice now recommended is contrary to the opinion of many, namely,—that in fracture of the skull, with depression, unless there be some *general* symptoms marking compression, the examination of the injury need not be very minute or rigid. Although we can distinctly ascertain that the bone is to a certain degree depressed, yet, if the patient remains perfectly in his senses, and is without any of the general symptoms of compressed brain, we are told to let matters remain as they are, for many in this state have recovered without interference. They think it right at any rate to give the patient a chance ; if bad symptoms come on they trephine him afterwards. This is the opinion of a number, but I esteem it to be an erroneous one. It is true that some patients with depression of the cranium have got well without an operation. It is true that some have recovered completely from the accident, and have lived for many years in good health with the bone depressed as when the injury was inflicted ; but I do not think that this has been the case generally. I am afraid that more have died than have lived of those who have thus been allowed to take their chance. Inflammation of the brain, though it does not come on at first, comes on by and bye. If it does not come on in a short time after the accident, say in the course of the first or second week, it may, nevertheless, make its appearance at a much later period. Even when the patient has been for a long time quite well, and thinks himself out of all danger, he is in imminent risk of being suddenly attacked with disease, and of being as suddenly cut off. In fact he is never out of danger. So long as he lives regularly and moderately, so long as he has nothing to excite him, and has no particular exposure, he may get on very well. But if at any time he is guilty of irregularity, so as to produce excitement in the system, the chances are, that he will suffer for it. If, for instance, he commits a debauch—if he gets drunk—if he exposes himself to cold—if he is attacked with inflammatory fever—if he is subject to passion—if at any time he is harassed in his mind—or has any thing else acting on him which will excite the system much—the chances are ten to one that he will be attacked with acute inflammation of the brain, and all that can then be done will not save him. We may now apply the trephine, but in all probability it will be too late. No measures will check the inflammation, but it will run on, and in a few days there will be symptoms of pressure on the brain from effusion, and a few days more will end the patient's life.

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* Since writing the above, I find that Sir Astley Cooper (the highest of authorities) has frequently witnessed untoward consequences, such as severe erysipelas, follow cuts made upon the scalp. If this coincide with general experience, it will certainly militate much against the practice which I am now recommending.

It is easy to see how all this happens. The brain is by no means so sensible a substance as was for a long time imagined. We may make pressure upon it, and perhaps we may even thrust substances into it, without doing it much immediate injury. If the injury offered to it be *very* considerable, then the symptoms of uneasiness will no doubt be shown immediately; but if the injury be less, some little time will elapse ere these symptoms appear. The brain will bear any thing almost but inflammation. It is inflammation which seems to be its great disturber; and, therefore, it is only after the irritation has been continued for a time, that the brain, in injury of the head, will begin to show itself much affected. If the proper means be used, it may even be a *considerable* time ere bad symptoms appear; and if the injury has been but slight they probably may not appear at all, the brain, as it were, accommodating itself to the offending substance. But for all this there is great risk. The brain, though able to bear much, and though tardy sometimes in putting on action, will only bear to a certain degree, and will sometimes become excited at an unexpected period. A patient who has recovered from depressed fracture of the skull, without having an operation performed to elevate the bone, lies under a great mistake if he thinks he is altogether safe. If he is extremely careful through life, and meets with no accidental excitement, he may indeed escape with impunity, but he is not as safe as other men; and even with all his care he may be overtaken when he least thinks of it. I am therefore inclined to think, that we should in *almost every* case of fractured skull with depression elevate the bone, and consequently, that we should be particularly careful in all cases to ascertain whether or not depression exists. But even granting that we do not elevate the bone,—admitting that we give the patient a chance without this, and only treat him medically, we should, nevertheless, ascertain the true state of the skull; because, if once we are satisfied that part of it is depressed, the patient will of course be considered in greater danger; and if he survives, he must receive more particular cautions as to his future conduct.

There could not be a stronger illustration of what is now advanced than the case which has called forth these remarks. Easton was for twenty-four hours nearly or altogether free from ailment. The brain, though pressed upon to such a degree, did not seem much disturbed; it seemed indeed to perform its functions as before. Even when symptoms of excitement did come on, by lowering the system, and reducing the excitement somewhat, we brought the brain back to its natural state. The bleeding, the opening medicine, low diet, and perfect rest, kept the severe symptoms at bay for some days; and had the injury here been less, we might perhaps have mastered them altogether. The case seems to me to be a good example of the extensive injury which the brain will bear so long as we can keep actual inflammation away from it.

I have said in the beginning that I put my little finger into the wound to ascertain the state of the bone, and it may appear strange at first thought to some, that I did not at once find out the depression. But a very little explanation will show that this is not very easily done. In an injury of the head, though there be a wound, and perhaps a pretty extensive one, the scalp is hardly at all separated from the bone. There is merely the cut in the integument, and the finger cannot be inserted between the bone and the scalp to feel minutely for the dimple, or fractured pieces of depressed bone. Besides, almost immediately after the infliction of the injury, such effusion takes place—such a puffiness of the scalp exists, that, unless the wound be pretty considerable, a satisfactory examination cannot be made. In all cases, then, where we have any doubt, it is better to enlarge the wound than leave the question undecided.

After death we were anxious to ascertain by inspection the state of matters within the cranium, but a relation of the deceased on board objected to it, and we could not overcome his prejudices. The rapidity with which the brain sent forth the protruding fungus was remarkable. Some of the medical gentlemen indeed supposed it to be the brain itself which was protruding, and certainly, when cut into, it had altogether the appearance of cerebral matter.

H. M. Ship Ocean, Lisbon.

ART. VIII.—*Case of Epilepsy of twelve years duration cured by Valerian.* By JOHN GAIRDNER, M. D., F. R. C. Surgeons, Edinburgh.

IN the beginning of January 1814, I was desired to see a married woman, about 40 years of age, and mother of several children, on account of epilepsy, to which she had been liable for more than twelve years. The paroxysms were generally preceded by a sensation of *globus* in the throat. They commenced with a scream, which was immediately followed by total insensibility, violent agitation of the arms and legs, and contortions of the features. These convulsive efforts gradually gave way to sopor, and a considerable degree of drowsiness lasted for the rest of the day. She had no remembrance after these fits of any thing that had occurred in the course of them. During the whole of the long period that she had been subject to them there was never any regularity observed in the time of their recurrence, but the intervals had been progressively decreasing. At first she was often exempt from them for several months together, but at the time when I was called she was visited by this very distressing disease twice or three times a-week, so that she had been forced to get a servant to assist her in her domestic duties, which she had formerly been able to accomplish without such aid. She sometimes had two or three attacks in twenty-four hours; but when this happened, the second and third attacks were less severe, and did not produce total insensibility.

I had very slight expectation of being able to do this poor woman any good, more especially as she had already taken without benefit a variety of remedies by the advice of several highly respectable practitioners of this place. But I was unwilling to pronounce the case desperate, and it flashed upon my memory, that I had somewhere read of the successful treatment of a similar case by the powder of valerian. I accordingly recommended to her to take a scruple of this powder night and morning. Two days after she had begun the use of it she had a pretty severe fit. She continued taking the powder for four or five days, till she had taken in all twelve doses of one scruple each, and then, finding herself free from the fits, she omitted the medicine without consulting me. She had a second fit, but much slighter, a fortnight after the first, and a third slighter than the second at the end of three weeks more. On both of these occasions she reverted to the use of the valerian. The memorandum of the case, which I have preserved in my note-book, is dated in May 1814, four months after I first saw her. She had at that time taken in all only thirty-six powders, and had been perfectly well from the time of the third attack. She has ever since continued perfectly free from the epilepsy, though she has at different times been induced to take the valerian, warned by such sensations as used formerly to indicate the approach of the fits. Anything which is calculated to frighten or to startle her brings on these sensations, which are also superinduced by grief and other depressing passions. In the year 1820 she lost her husband, and the fatigue and anxiety she suffered during his last illness brought on many of the old feelings, together with some fits of convulsive agitation, followed by drowsiness, but not preceded by a scream, nor attended with insensibility. They were of short duration, and were speedily banished by that remedy which has proved to her so great a blessing. They must have proceeded from the same cause which produced her former fits; and yet they cannot strictly be denominated *epileptic*, destitute as they were of the essential characters of epilepsy.

I visited this patient within these few days,* and found her in excellent health, and in full possession both of her bodily and mental powers. She has not taken the valerian for more than six months, having all that time been remarkably free from those ominous sensations which formerly induced her to resort to it.

I conceive that I am fully entitled to impute the cure of this disease to the remedy employed:—*First*, because of the great number of years that the patient had been liable to epilepsy, and the progressive increase of the frequency and severity of the fits during that time,—circumstances which destroy all probability that the cure should have arisen from any spontaneous change in the constitution of the patient: *Secondly*, because after the administration of the medicine only three fits occurred, and these at intervals progressively increasing; and, *thirdly*, because the use of the same remedy has always removed the disposition to those imperfectly formed fits, to which she has been occasionally liable since the cessation of the epilepsy.

I have not ventured to occupy the time of the society with this narrative, on account of any pretensions to originality in the practice adopted, for this I have already disclaimed; nor have I done so on account of any sanguine hopes which I am disposed to entertain of the universal efficacy of valerian in a disease so various in its character and causes as that with which my patient was affected; for I never indulged expectations so contrary to all analogy, and if I had, my own experience since the date of this cure has afforded matter quite sufficient to dispel the illusion. But I bring the case forward, because it appears to me sufficiently remarkable to deserve being recorded; because I think it probable that the remedy which proved successful may deserve to be employed in epilepsy more extensively than it is at present; and because the history of the symptoms will serve in some degree to point out in what instances it may be expected to be useful. On this latter point I have only to remark, that I should be disposed to make trial of valerian in all cases of epilepsy occurring in individuals of the nervous temperament, and more especially in females who have been often troubled with globus and other hysterical symptoms.

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* This account was written in 1826.

Some of my professional friends to whom I have repeated the particulars of this case are disposed to refuse the title of epilepsy to the disease, and to rank it as one of the varieties of hysteria. The question is purely one of nomenclature. That it originated in the hysterical temperament there can be no doubt; that the symptoms which attended the paroxysms were those of epilepsy is equally indubitable. And I apprehend that it is a principle of nosological classification pretty generally admitted, that diseases are to be arranged according to their characteristic symptoms, and not according to their presumed causes. But, however denominated, it was a disease as destructive of the comfort and usefulness of the individual as if it had proceeded from the usual causes of epilepsy.

Art. IX.—*Case of Spontaneous Formation of a Preternatural Anus, with Steatomatous Tubercles of the Liver, where life continued long under extraordinary circumstances.* By William Henderson, M. D. Perth.

April 3, 1826.—G. D., æt. 8 years, has been from August last liable to severe fits of obstruction in his bowels. With this exception, he has been a healthy and vigorous boy from his infancy. After one of these attacks, which was overcome by croton oil, scammony, gamboge, &c., his bowels acted regularly without the aid of medicine; his appetite, however, did not return; he became daily more feeble, and lost flesh very fast; the skin was hot and dry; the tongue moist, but furred; the pulse 120; his stools passed copiously every morning, clay coloured, and of yeasty consistence, with glistening scum on the surface; urine seldom passed, except when his bowels were moved, and then, and at all other times, with much pain; the little food he took was often rejected. Three days after the yeast-like stools appeared, he entirely lost the power of his lower extremities.

As the idea or appearance of medicine excited vomiting, one grain of calomel was mixed in his food three times a-day without his knowledge. The food so medicated was at first almost immediately rejected; after a little time he generally retained it for one or two hours. Matters went on in this way for ten days, when his bowels became more relaxed. In place of one copious stool in twenty-four hours, he had now three or four, while, at the same time, his abdomen rapidly enlarged, and was tense and painful to the touch. After this he recovered the use of his limbs, and the urinary symptoms entirely disappeared. His abdomen, however, continued to enlarge, the discharge from his bowels to increase, and the other symptoms also to gain ground; I therefore ordered him to be put into a warm bath impregnated with nitro-muriatic acid. After the bath he slept better, his appetite at the same time rather improved; but the fatigue of moving him was more than his feeble strength could bear, and I therefore substituted sponging for the bath.

At this period my friend Dr John Thomson of Edinburgh was consulted by letter. He recommended assafetida and anodyne enemas. The enemas had the effect of greatly diminishing the alvine discharge, but the abdomen enlarged in proportion, and the vomiting, which had not been troublesome from the first time he was bathed, returned. After being used for three days without success, the enemas were discontinued, and in two days more the discharge from the bowels resumed its former quantity and quality, and his stomach again retained the little food he took. His body became emaciated to the last degree, and his strength so much exhausted that he was unable to turn himself in bed without assistance. His abdomen was greatly enlarged, and very tender all over, but particularly about the umbilicus.

May 25th.—His case appeared to myself and all who saw him to be hopeless. As a last resource, I determined on making trial of iodine, and began with ten drops of the saturated tincture morning and evening, gradually increasing the dose to thirty drops. From this time he improved daily; his appetite in a few days became keen; the abdomen gradually decreased in size, and every day became less tender; his strength and flesh also improved rapidly. Ten days after he first took the iodine the right testicle became painful and enlarged. As the iodine he took rested well on his stomach, I gave him an additional dose daily, at first fifteen, afterwards thirty drops; cooling lotions being at the same time applied to the testicle. In seven days the left knee swelled and became stiff and painful; but the testicle showed symptoms of amendment, and fifteen days from the time the knee began to swell, all traces of disease in the testicle were gone. The alvine dejections also improved; the skin became cool and moist; the pulse 130; his appetite good; and he slept well.

June 15th.—The bowels have been regular ever since he took the iodine. (27th.) The belly is still decreasing in size, and is no longer tender. His knee is still a little stiff and swelled, but is fast improving,—in other respects, too, he is every day getting better.

July 1st.—I sent him to sea-bathing, with orders to go on with the iodine, and to have the body spunged night and morning with sea water. (8th.) In consequence of a fall to-day, he struck the left knee on a stone, and was attacked with such acute pain in the joint as rendered every attempt at motion intolerable. As soon as I was informed of the accident I directed him to be brought home; but eight days elapsed before he could be moved. (16th.) On his returning home this day I found the knee swelled and painful on pressure and motion, but his health otherwise as good as on the 1st. (19th.) He has been five days without iodine. A fresh supply was ordered, and the same doses given. Next day he complained of pain in the bowels, was dull and languid, and had little appetite; the belly, however, was almost of the natural size, soft, and hardly at all tender, and the swelling of the knee was diminishing. The iodine was therefore omitted, and on the following day the pain in the bowels had ceased, his appetite had improved, and he was more lively. On the 25th, the iodine was resumed in the dose of fifteen drops twice a-day, but the paroxysms of pain of the bowels returned so severely that it was abandoned on the 26th. Next day the pains had abated, his appetite, which had entirely ceased, returned, and the evacuations were regular. The tormina, however, continued to recur at times for seven or eight days after; but on the 4th of August they ceased entirely, the appetite all the while improving, the evacuations continuing natural, but the pulse generally about 130. There was now fluctuation on the inside of the knee, and I proposed to evacuate the matter; but he would not give his consent till three weeks after, when it was evacuated with the lancet. From this time he improved steadily till December.

In December he had a very severe attack of hooping-cough, which he did not get entirely quit of till spring. During the winter the knee discharged a great deal of matter. In July 1827 I sent him to the coast, but he returned in three weeks not much benefitted, as the weather had been very cold and wet. The knee then began to improve; but in proportion as it looked better, he lost flesh and strength, till he was sent again to bathing quarters, where his spirits, appetite, and general health improved somewhat. About the middle of September the discharge from the knee dried up almost entirely; but from that time his appetite and strength failed; the abdomen began to enlarge, and to be affected with twitching pain around the navel; he had frequent vomiting after taking food, the bowels became relaxed, and in a few days his emaciation was very much increased. At last the umbilicus became tender and discoloured, and on the 29th it gave way and discharged a great quantity of matter. On being suddenly summoned to visit him during the night, I found a small opening in the centre of the umbilicus, through which feces and particles of undigested food passed freely. A compress and bandage were applied, and he was directed to be kept very quiet. Next morning I learned that he had slept well, and had a natural evacuation; his appetite was improved, he had no pain, and no inclination to vomit. On the following day he continued to improve, and was less apprehensive of himself. On the 11th the discharge from the umbilicus had ceased. Till this time his improvement was progressive. Now, however, his appetite failed, and a profuse diarrhœa commenced, which, notwithstanding the liberal employment of kino and catechu, wine and brandy, continued excessively till the 15th, and reduced him to an extreme state of weakness and exhaustion. The discharges by stool then gradually became less abundant, when at length on the 18th, the umbilical discharge returned profusely and relieved him much. Matters went on in this way during the rest of the winter. When the wound discharged freely, which it generally did for three or four days, his appetite improved, he was more cheerful, and slept better; but when the discharge diminished, which usually was the case for six or eight days, he had sickness and vomiting of food. When it dried up altogether, which was the case for a week at one time, it brought on the same profuse alvine discharge as above, and brought him again to the point of death, until a fresh discharge relieved him.

Early in November 1827, some fulness and hardness were first observed in the epigastric region, and continued to increase till his death. Towards the end of January 1828, small circular elevations were felt on the surface of the fulness in the epigastrium;

these also went on increasing. As the enlargement increased in the epigastrium, the quantity of food he could take at one time diminished, and latterly almost every attempt at taking food brought on vomiting. During all this period his bowels were pretty regular; the tongue was always quite clean and moist, and of a bright cherry colour; the pulse always about 130; the skin generally natural. The disease in his knee, which had been in a state of inactivity from September 1827, in February 1828 began to throw out more matter.

February 24th.—The stomach will now scarcely receive any thing. He complains often of sickness, and faintness, and has not been able to be out for the last two days; bowels very lax; extreme emaciation. Notwithstanding his extreme weakness he cannot be persuaded to lie in bed, on account of the uneasiness he feels in the recumbent position. He finds most ease in a sitting posture, with his head resting on a pillow placed on a table before him.

Matters went on in this way till the 2d April, when he died. For six hours previous to his death his sufferings were extreme, and their termination afforded no small relief to those who witnessed them.

Dissection.—Twenty-four hours after death, my friend Dr John Stewart kindly assisted me in the examination of the body. External appearance. Extreme emaciation; the wound in umbilicus gangrenous; great distension in the epigastrium. On laying open the abdomen the liver was the first object that attracted our attention; it occupied the whole of the upper part of the abdomen, and by its great size had forced up the false ribs on both sides. The muscles, peritonæum, and liver, were all found firmly adhering together, and could not be separated but by the scalpel. The convex surface of the liver was profusely studded with steatomatous tumours, varying in size from a pullet's egg to a pea, and all deeply imbedded in its substance. We were obliged to dissect the liver from the diaphragm, bowels, and spleen, to which it firmly adhered. After tying a ligature round the extremities of the stomach, and dividing the œsophagus and duodenum, the whole were removed out of the body. The stomach and pancreas were found closely adhering to, and indeed imbedded in the substance of the liver; and after searching in vain for the right kidney elsewhere, it also was found buried in the substance of this gland. The tumours were smaller, and much less numerous on the concave than on the convex surface of the liver. The liver weighed four pounds ten ounces, and its substance was of a pale colour, and so soft as to give way under moderate pressure. The gall bladder was moderately distended with apparently healthy bile. The pancreas adhered closely to the liver and stomach, and was completely steatomatous throughout its whole substance. The stomach was very small, and much thickened where it adhered to the liver and pancreas. The kidneys were larger, softer, and of a darker colour than usual, but presented no other form of disease. The parietes adhered so firmly to the viscera, that they could not be separated without the scalpel, except at that part of the *parietes abdominis* which formed the anterior wall of the sac about to be described. The intestines were of a deep bluish purple colour, highly vascular, and everywhere agglutinated to one another, and to the surrounding organs.

The opening through the umbilicus was found to run into the arch of the colon; the opening into which was from three and a-half to four inches in length on the under side. The bowel was much thickened, was in a state of great expansion, and formed the superior wall of a sac, which, when in a state of distension, we supposed might contain from sixteen to twenty fluid ounces. The anterior wall was formed by the *parietes abdominis*, and the posterior by the intestines in a state of complete adhesion. The intestines here had their coats very much thickened, and their vessels gorged with dark-coloured blood. The sac contained feculent matter.

The mesenteric glands formed one congeries of tumours, exactly resembling those on the liver, and varying in size from a large walnut to a pea.

The bladder was free from all appearance of disease.

Thorax.—The lungs adhered slightly in many places to the pleura, were partially hepatized, and generally of a darker colour than usual; but no induration or any other form of disease was observed in their substance.

The heart was unusually small, and the pericardium in close adhesion to its surface in every part. A large pale-coloured polypus was found in each ventricle, but not even the appearance of blood. The head was not examined.

The morbid appearances now detailed were not less extraordinary than the symptoms during life, and cannot fail to be highly interesting to the pathologist. The close adhesion which was found to exist between every part of every organ in the abdominal cavity must, I think, have been the consequence of the violent abdominal symptoms he had previous to 25th May 1826, and must have existed from that period; for from about the middle of the following month to the time of his death, he did not complain of pain or tenderness of his belly, with the exception of that which existed about the umbilicus before it burst. The seat of this tenderness was found to correspond exactly with the size of the sac above noticed. That he was indebted for the last six months of his existence to the adhesion of the abdominal viscera, by which the contents of the colon were prevented from surrounding the organs contained in that cavity, I think will not be doubted. The light and the size of the room in which the body was placed, and the time allowed for the examination of it, precluded the possibility of the dissection being conducted with that minuteness and attention which such an extraordinary accumulation of diseased structure required. Enough, however, has been observed to render the continuance of life under such circumstances little less than miraculous. And at last his life seemed to us to have been terminated by the mechanical pressure of his enormous liver, rather than by the change of structure that disease had made in it or any of the other viscera.—This pressure satisfactorily explains the inability of the stomach to receive food, and also his partiality for a sitting posture. It was also owing to this great pressure of the liver that the spine had yielded ; for the concavity of the spine was found to correspond exactly with the convexity of the liver lying over it. That the action of the heart was impaired by the adhesion of the pericardium cannot, I think, be doubted. The uniformity of its action was very remarkable ;—for the last two years and a-half of his life I never observed his pulse to vary from 130. From the excessive accumulation of disease in his system, and the well known sympathy existing betwixt the different parts of the human body, it would naturally be supposed that life to him would have been destitute of enjoyment. But the case was otherwise ; for, with the exception of what he suffered from the knee and from hooping-cough, the term uneasiness would better express his sufferings from June 1826 till the time of his death, than that of pain. It will readily be here understood that I speak generally. His constancy and dispatch in his ordinary avocations were only exceeded by the vigour and acuteness of his mind. His reasoning faculties were of the highest order. A mind like his, necessarily often pondering on his bodily sufferings, could not fail to be inquisitive. Consequently his questions to me were neither few nor always easily answered ; if my answer happened to be unsatisfactory, I was immediately called on to support it by a reason ; and if any fallacy or feebleness existed in my arguments, they were either immediately pointed out by him, or dexterously turned against me.

2, *Rose Terrace*, *Perth*, *30th April* 1828.

ART. X.—*Case of Poisoning with Opium, in which the Stomach-Pump was successfully employed.* By JAMES L. BARDSLEY, M. D., Physician to the Manchester Infirmary, Dispensary, Fever Wards, Lunatic Hospital and Asylum, &c. &c. Lecturer on the Theory and Practice of Medicine, Materia Medica, and Medical Botany.*

ABOUT half-past three on the morning of the 3d of September 1826, I was requested by my late friend Mr Boardman (Surgeon) to visit a young woman named Ann Glossop, 20 years of age, whom he supposed to be labouring under the influence of some powerful narcotic. I found her in a state of complete insensibility. Her breathing was stertorous; countenance pallid; eyelids closed; pupils permanently contracted; heat of skin moderate; pulse 120, full and soft; mouth open; tongue immoveable; lower jaw dropt and fixed; hands of a purple colour. Having strong reason to concur with Mr Boardman in believing that the above symptoms did indicate the reception of a large dose of some narcotic into the stomach, an inquiry was immediately instituted respecting the previous mental and bodily state of the patient, and the remedies she had been taking. I was informed by Mr Boardman that she had first complained to him on the morning of the 2d September, of a very acute spasmodic pain in the bowels, subsequent to a mild attack of cholera. He directed warm fomentations to be applied to the abdomen, and prescribed a draught with six drachms of castor oil, thirty drops of laudanum, and twenty-five of spirit of lavender. The pain was almost instantly relieved by the draught, and in the course of two hours, the bowels were twice freely evacuated, and urine secreted copiously. At eight P. M. Mr Boardman found that the pain of abdomen had not returned more than thrice, and only in a slight degree. He then prescribed three grains of calomel with a scruple of the opiate confection, in the form of bolus, to be taken at bedtime; and every fifth hour an ounce of a mixture containing sulphate of magnesia, rhubarb, and camphor. The bolus was given at a quarter past ten, together with the first dose of the mixture. The nurse who was in attendance then retired to rest till three in the morning, which was the hour appointed for the second dose of the mixture.

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* We have to apologize to Dr Bardsley for having delayed so long the insertion of his paper. In passing through various hands before it reached us, the name of the author was mislaid, and it was not till a few weeks ago that we were able to discover it.

Finding the patient in a profound sleep, she felt inclined not to disturb her; but as her orders were positive, she most fortunately deemed it wise to follow them. She vainly endeavoured, however, to rouse the patient, and being then greatly alarmed, dispatched a messenger immediately for Mr Boardman. The moment he saw her, he was convinced that she was labouring under the effects of some narcotic, which he suspected was opium. He instantly sent for me, and I found the patient affected with the symptoms described above. Under these circumstances there was no time for delay, and we agreed that the first object was to cause an immediate rejection of the contents of the stomach by vomiting. The mouth being forced open and so secured, a weak solution of mustard, the sulphates of zinc and copper, &c. were administered, and the throat was tickled with the finger and a quill, but without producing the desired effect. The nostrils were also stimulated with the *liquor ammoniæ*, but to no purpose. Meanwhile Weiss's stomach-pump had been sent for from the Infirmary, and having now arrived, the tube was readily passed into the stomach. About an ounce and a-half of a dark-brown fluid was first removed, which appeared to us to resemble a watery solution of opium. The exhaustion was again very carefully repeated, but no more fluid was obtained. A pint and a-half of the mustard solution was then injected into, and withdrawn from the stomach, and this operation was several times repeated. The first portions alone had a brownish tint. The state of the patient was at first not perceptibly affected. The pulse continued full and moderately frequent, and the heat of body and extremities remained natural. We now injected solutions of the sulphates of zinc and copper, but without exciting vomiting. Mustard cataplasms were next applied to the epigastrium and soles of the feet. The gullet-tube was again introduced, and the stomach was repeatedly distended with warm water, which was afterwards removed. These successive operations at length seemed somewhat to arouse her, but she soon after relapsed into the same state of insensibility. The body was kept in constant agitation, cold water was thrown repeatedly on the face and breast, and the nostrils were again freely stimulated with *liquor ammoniæ*.

About six o'clock we for the first time perceived a slight return of consciousness. At this period we received the kind assistance of Mr Creswell, (late house-surgeon of the Infirmary,) who very judiciously suggested the immediate injection of stimulants into the stomach. Accordingly, brandy and water, and diluted sulphuric ether, with aromatic spirits of ammonia, were introduced into the stomach by means of the syringe, and a turpentine clyster was administered and partly retained. This poor young woman still remained, however, almost beyond hope; but the stimulating and rousing plan of treatment was not for a moment relinquished. About seven o'clock the clyster was repeated, and the greater portion of it retained. About eight o'clock Mr Boardman introduced a tea-spoonful of brandy and water into the mouth, at the same time compressing the nostrils with his left hand, when I felt convinced that I observed a slight effort on her part to swallow the fluid; and on speaking to her in a very loud and angry tone, she for the first time elevated one eyelid. The state of the pupils remained unchanged. As yet, the stomach did not manifest any signs of returning sensibility. Strong coffee was administered by tea-spoonfuls, and she appeared a second time to make an effort to swallow. On being pinched rather severely, she now showed some little sense of feeling, whereas previously this did not in the least affect her. Her pulse remained regular, and her countenance became more natural. Deriving encouragement from this slight improvement in the symptoms, our efforts to arouse her were assiduously continued until half-past nine o'clock, when we had the satisfaction to witness a sudden discharge of fluid from the stomach. More stimulants were now exhibited, and without the aid of the elastic tube, as she succeeded in slowly swallowing them. About ten o'clock, we were much delighted on hearing her gently whisper "yes," in reply to a question put to her by one of the attendants. In the course of another hour, the amendment became more decided. Strong coffee was administered to her now and then, and cold water was occasionally dashed upon her face, in order to arouse her as much as possible. She continued slowly but progressively to recover, and at twelve o'clock I ventured to leave her, having been engaged with Mr Boardman in the use of the above means for nine hours. I directed her to be constantly agitated, with the view of keeping her as much awake as possible. I also ordered a common emollient injection, and lemonade for drink. She answered all my questions distinctly, but, as might be expected, very feebly. At six o'clock in the evening she was much better.

It is unnecessary to carry the reports farther. It may suffice to state, that she daily recovered her health; but it was not until she had remained in the country for some weeks, that she was able to resume her usual duties; and indeed her mind has ever since remained in rather a low and desponding state, and she much fears she will never regain her wonted spirits; but of late she certainly appears to be more cheerful.

This case seems to be interesting, inasmuch as it affords additional evidence of the great utility of the exhausting syringe, in some instances where a poisonous substance has been received into the stomach. I am firmly of opinion, that without the aid of that instrument Glossop would have lost her life. When a person is under the influence of a powerful narcotic, we know that it is a difficult matter to introduce any fluid into the stomach, owing to the power of deglutition being completely destroyed; nor is the attempt altogether free from danger; for by pouring fluid into the mouth at random, a portion sufficient to produce suffocation may enter the trachea, since the epiglottis is no longer irritable.

By means of the elastic tube passed into the stomach, we can introduce whatever fluid may be thought proper, and remove it again at pleasure. There is also another advantage attending the use of the syringe, which struck both Mr Boardman and myself most forcibly in the case above detailed,—namely, the facility with which it enables us to make a powerful impression on the system; for we found that the mere act of repeatedly injecting tepid water into the stomach roused the patient more effectually than any of the external stimuli which were employed. I have used the stomach-pump in three other instances in which a large quantity of opium had been taken for the purpose of self-destruction. In the case of a young man, at present a patient of mine in the hospital, who, in a fit of despondency, had swallowed a large quantity of laudanum, our house-surgeon, Mr Guest, by the aid of the exhausting syringe, succeeded in removing the greater portion of the drug from the stomach, and thus rescued this youth from a premature death. Some weeks ago, a child aged 9 years, was brought to the Infirmary by its distressed mother, who had accidentally administered to it a considerable quantity of laudanum more than seven hours before. The exhausting syringe was immediately employed, and by it the contents of the stomach were removed, but the young patient expired in the course of the evening. On examination of the stomach, its inner membrane exhibited evident marks of inflammation.

ART. XI.—*Cases of Poisoning with Carbonate of Potash.*

By ANDREW DEWAR, Esq. Surgeon, Dunfermline.

IN both of the following cases death was the consequence of drinking a solution of Potash. The first presents to us the severe symptoms which instantly followed the swallowing of the poison, and the effects produced upon the gullet and stomach, when death speedily succeeded to the accident. The second exhibits the symptoms arising from disease in the stomach, and extensive destruction of the mucous membrane of the gullet, terminating in a general contraction or stricture of that tube; and ultimately the appearances on dissection of the body at the distance of upwards of five months from the infliction of the injury.

Case I.—On the 2d of November 1818, I was called to visit a little boy, who had drunk, according to computation, about three ounces of a strong solution of the carbonate of potash. I saw him an hour after the accident. The tongue, gums, and fauces were shockingly destroyed, the cuticle appearing as if seared with a hot iron, while the inside of the cheeks, roof of the mouth, and velum were entirely inflamed. He complained much and vomited incessantly. Every attempt to swallow gave him great pain. Nevertheless, he was encouraged to drink vinegar and water, of which, under the assurance that it was to relieve his pain, he swallowed a considerable quantity. It was instantly rejected by vomiting. He took also an occasional mouthful of an infusion of lint-seed.

It is almost unnecessary to say that no remedy was of any avail; and he died in twelve hours from the time that he drank the caustic.

On dissection the mouth presented the appearance I have already described. With the exception of a few small spots, the mucous membrane of the pharynx and œsophagus was completely disorganized,—scarcely any trace of the natural structure could be perceived. Blood was universally extravasated between the muscular and pulpy mucous coats. The stomach was generally inflamed, but especially along the greater curvature. In two places, about the size of a shilling, the mucous membrane was destroyed, and the injured surface was covered with clotted blood. In many places blood had been extravasated between the mucous and muscular coats. The stomach contained a small quantity of a bloody fluid. The peritoneal covering was not affected. None of the other bowels seemed in any way injured.

Case II.—About five o'clock on the evening of Sunday the 22d of July 1827, Mrs ———, who had been all day indulging freely in whisky, drank by mistake a wine-glassful of a strong solution of the carbonate of potash. She felt acute pain at stomach on the moment of swallowing it, and almost immediately vomited. By the advice of a neighbour she drank a considerable quantity of warm water, by which the vomiting was encouraged and the stomach evacuated. The night was passed without much suffering. I saw her on the following morning at eleven o'clock. She then felt little pain. On pressing over the epigastric region she complained of some uneasiness, and an inclination to vomit. The mouth and fauces were covered with a dirty brown slough, which rendered the surface nearly insensible to the touch. Pressure along the side of the neck was not accompanied with any pain. She swallowed fluids without difficulty; but they had scarcely reached the stomach when they were followed by a sense of burning, and in general, in a few minutes, were rejected by vomiting. Her pulse was quick. She looked haggard and exhausted, and was greatly agitated.

I directed her to drink freely of vinegar, largely diluted with water, for a few hours; to take gruel alone for food; and to apply a handful of leeches on the stomach, and warm fomentations. As the vomiting and pain on pressure continued, the next day more leeches were applied, and a blister.

Still, however, she complained of scarcely any pain or difficulty in swallowing; and the sloughs adhered firmly to the mouth and fauces. The pulse was quick; the skin hot and dry; and the thirst very urgent. On the fourth day the vomiting and pain at stomach diminished considerably; but the sloughs in the mouth began to separate, and burning heat in the fauces and gullet immediately supervened.

During the following week large portions of tough matter, sometimes firm and adherent like leather, were brought up by coughing, hawking, or vomiting. Gradually the surface, so far as could be seen, became clean, though raw, and the burning and pain on swallowing were most distressing.

From the time that the sloughs began to separate leeches were applied almost daily for a fortnight along the side of the neck, and the bleeding was promoted by warm fomentations. She was supported on milk; was encouraged to drink freely of an infusion of lint-seed; and had her bowels occasionally moved by castor oil suspended in mucilage.

After a month had elapsed the mouth and fauces began to assume a more healing appearance; the pain and difficulty of swallowing diminished; the stomach generally retained both food and medicine; the fever in a great measure subsided; and, had the circumstances been more favourable, there was reason to hope that her life might have been saved. But so addicted was she to unrestrained indulgence, that no admonitions, no experience of its baneful consequences, could induce her to resist her long-continued habits of intemperance. No sooner had the alarm for her life, which the accident and consequent suffering excited, in some degree diminished, than she disregarded every injunction to confine herself to a milk diet, and returned to the use of all kinds of animal food, and to an unmeasured allowance of malt liquor, and even of ardent spirits. The effects were not long in being felt. The first relapse took place after an afternoon spent in visits to her neighbours, and in cheering herself with the vain confidence of renewed health. During the night she awoke thirsty ; but on trying to drink she found she could not swallow. She did not complain of pain. On making an attempt to swallow some milk in my presence, it seemed as if a more than ordinary effort was necessary to force the fluid along the gullet. When it reached a particular spot, to which she pointed, about the middle of the sternum, it stopped, and, after being retained for about a minute, it was rejected without retching, somewhat in the manner as if a single jet was thrown from a large syringe. The body was cold ; the pulse languid ; and she was oppressed with torpor and constant drowsiness. The tongue gave almost immediately expressive evidence of the changes which were going on within. From being clean, and nearly covered with cuticle, though still irritable in its appearance, it became tender and fiery along the sides, while a strip of a thick buff-coloured and tenacious coating, about the breadth of the finger, ran along its centre from the tip to the root.

Recourse was again had to leeching, fomenting, and blistering along the side of the neck and the spine, while she was nourished, as we best could, by injections of milk and decoctions of animal food.

In this condition she remained for four days, incapable of swallowing the smallest particle either of food or drink, and so torpid that she could with difficulty be roused. After this time had passed, the coating on the tongue began to separate ; she hawked up a great quantity of a muco-purulent fluid ; and the power of swallowing liquids returned. In the course of another day the tongue was clean, and exhibited the most exquisite specimen of the " beef-steak tongue" I have ever seen. The torpor forthwith vanished, and symptoms of returning health began again to appear.

As soon as the excitement had entirely subsided, I passed a bougie into the stomach, which it entered without difficulty; but it communicated the sensation as if it grated over a rough surface. The operation was followed by some pain, and a threatening as if the difficulty of swallowing would have returned. For the present, however, all went on well, and she recovered her looks in a remarkable degree. Still the pulse continued quick ; the tongue, though nearly healed, had a dry, bright-red, glistening appearance, as if spread over with a coating of varnish ; and the tenderness of the stomach on pressure, and the tendency to vomiting, never wholly subsided.

It would be tedious to enter into the details of the different relapses (amounting in all to seven) which she suffered during the last four months of her life. They differed in no respect from that which I have endeavoured to describe, except in their duration, the shortest being only two days, and the longest seven. In all of these the attacks could be distinctly traced to some instance of gross irregularity, either in eating or drinking, or more commonly both.

Under these repeated attacks her strength gradually declined, and she died, having been unable to swallow anything for six days previous to her death.

Although the circumstances of this case rendered it impossible to judge accurately of the effects of remedies, yet I may mention, that, from the period of the first relapse, I endeavoured to keep up a constant counter-irritation by the repeated application of blisters over the stomach, and along the sides of the neck and spine, by rubbing a portion of the surface with tartar emetic ointment, or by occasionally dressing the blistered surfaces with the ointment. To these leeches and fomentations were uniformly conjoined during the acute attacks. On another occasion, besides the one I mentioned above, I passed the bougie into the stomach, but again had reason to regret it, as the experiment was in both instances followed by some degree of pain and increased irritation. About a month before her death one of these trials was made, and the instrument (nearly as large as the little finger) was passed without meeting with any extraordinary resistance. On the fourth day of the last attack but one which she suffered, I attempted to pass a bougie into the stomach, for the purpose of affording her a supply of nourishment, if the passing of the instrument could be borne, as her exhausted condition made it certain, that, if the obstacle to swallowing was not speedily overcome, she would soon perish from inanition. To this expedient I was encouraged from the total absence of all pain on attempts to swallow, and from her not complaining of increased uneasiness on moderate pressure along the sides of the neck. The instrument, however, could not be endured for a moment. Its introduction gave her considerable pain, and was instantly followed by an alarming attack of difficulty in breathing. On this occasion the obstruction to swallowing continued seven days, and I doubt not that the attack was prolonged by the attempt to pass the bougie.

The bowels were in general regulated, without much difficulty, by castor oil, aided by common emollient injections; but upon two or three occasions, I was under the necessity of using some more active means, such as the compound powder of jalap, before any evacuations could be obtained. The feces frequently presented a very singular appearance, consisting of hard scybalous portions, resembling a handful of nuts, floating in the fluid of which the injection was composed.

I opened the body on the day after her death in the presence of Mr Bowes.

The first thing which attracted our notice was the enormous size of the liver. It descended to the crest of the ilium on the right side, and shelved forward so as to conceal, under its thin edge, a great portion of the intestines. It also descended into the hypogastric region to within (as we ascertained by measurement) two inches and a-half of the pubis. The only deviation from its healthy structure which we could perceive was, that it was somewhat firmer in its texture than natural.* There was no appearance of disease in the intestinal canal. It was perfectly empty. The lungs were sound. The œsophagus was thickened in its coats, and contracted in calibre throughout its whole extent; the contraction commenced as the pharynx terminated, and increased until about two inches above the cardiac orifice of the stomach, where the structure became so narrow that a probe could scarcely be passed. The thickening and contraction were not confined to the muscular coat, for the mucous coat was proportionally affected, and was no longer loosely attached to the muscular coat, but firmly incorporated with it. In several places the mucous coat was extensively destroyed by ulceration. The stomach also exhibited marks of having suffered severely. There was no thickening or destruction of parts; but between the mucous and muscular coats, around the cardiac orifice, and particularly where the stomach bulges towards the left side, there was a vast number of spots of extravasated blood, varying in size from a pin's point to a barley-corn. When the stomach was first removed from the body, its coats throughout were probably of a higher and more rosy colour than natural; but there was no trace of those minute ramifications of blood-vessels, which ought to be regarded as distinctive of the existence of recent inflammation.

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* Whether the prodigious increase in the size of the liver ought to be attributed to her extraordinary indulgence in ardent spirits, I will not pretend to decide; but I may mention, that, for a very long period of time, she had been addicted to the use of spirits, and that, especially for nine years before her death, her excesses were very frequent, and the quantities she drank enormous. On many occasions she was constantly intoxicated for weeks, once for six weeks without intermission, during which time she drank every day not less than half a gallon (4lb.) of whisky, and on one of these days 6lb.; on one occasion she was constantly drunk for the almost incredible period of fifteen weeks; and during the whole of that time she consumed not less than half a gallon every day. During the first five of these fifteen weeks she was not undressed, nor during the last six. These facts may be depended on.

ART. XII.—*On Strangury from Cantharides, and its relief.*

By JOHN DAVY, M. D. F. R. S.

STRANGURY from cantharides, especially when applied to the skin for the purpose of blistering it, is of such frequent occurrence, and generally of such short duration, that it is commonly thought little of; and I hardly know which has received least attention from systematic writers,—the explanation of the affection, or its relief.

To those who are conversant in hospital practice, and who apply themselves to pathological anatomy, it must be well known that this kind of strangury is connected with phlogosis of the lining membrane of some part of the urinary passages. I have observed it most frequently in the pelvis of the kidneys, and in the bladder of urine, and occasionally in the ureters, and in the upper part of the urethra. The part affected with inflammation is swollen and dark-red, from blood extravasated into the cellular structure, under the epithelium. Sometimes when the effect is most severe, blood, it is well known, is actually effused into the passages themselves, giving rise to bloody urine. Sometimes, on the contrary, when the effect is slight, œdema, with very little redness of the mucous membrane is produced, unattended with strangury or any symptom indicating the specific action of the cantharides on the parts in question.

During the prevalence of strangury, I need not observe, the secretion of urine by the kidneys is either much diminished, or almost totally suppressed:—At the same time, from the irritation of the bladder, a constant desire urges the patient to attempt micturition.

The experienced practitioner can have little faith in the means commonly recommended for relieving this painful affection; such as the camphor mixture, *spiritus ætheris nitrici*, &c. Those who have tried these medicines most, if I may draw an inference from the result of my own observation, must place least confidence in their efficacy. The only means of relief which I have found almost constantly to succeed is the introduction of the catheter, used not with the idea of drawing off urine, but for the purpose expressly in question. It should be employed with delicacy and caution, just slipped into the neck of the bladder, and kept in only a few seconds. The process is seldom very painful, and the relief is almost immediate.

The rationale of the effect I shall not attempt to explain, as I have nothing but conjecture founded on analogy to offer on the subject.

Zante, August 24, 1824.

ART. XIII.—*Essay on the Nature of Inflammation.* By JAMES SYME, Esq. F. R. C. Surgeons, Lecturer on Anatomy and Surgery, &c.

AFTER so much has been said and written on the subject of inflammation, it may seem presumptuous in me to attempt any new exposition of its nature within the narrow limit afforded by a periodical publication. Nevertheless, having often had occasion to regret the difficulty and disheartening uncertainty which meet young men at their very outset in surgical study, owing to the perplexing and conflicting doctrines which are taught respecting this fundamental part of their professional knowledge, and having succeeded in giving a view of it which has proved not only easy and intelligible, but also extremely useful as a preparation for the pathological and practical instructions which it preceded, I think it my duty to publish a short statement of the opinions in question, for the benefit of those to whom I have not the honour of addressing them in my lectures.

One of the principal sources of the difficulty and confusion which distinguish inflammation is, I believe, the very various use that has been made of this term. Sometimes it is understood to express that condition of a part in which it is red, hot, swelled, and painful; at other times it is employed to denote the peculiar action which occasions the formation of pus,—or causes absorption—or pours out dropsical effusion,—or unites surfaces by the exudation and organization of lymph,—or produces new structures, such as scirrhus.

It is quite evident, that, when inflammation is used in so extensive a sense, it becomes nearly synonymous with disease, and ceases to be serviceable in expressing any particular condition of the nutrient, or, as it is called by others, the capillary apparatus. I must beg it, therefore, to be distinctly understood, that I will use the term inflammation merely to imply that condition of a part in which its natural actions are more or less completely suspended; and there are not established any new ones that alter its structure or produce new secretions. This condition, which is usually attended with redness, heat, and pain, almost always intervenes between the healthy actions of organs, and those morbid ones which alter their structure by separating from the blood matters, that differ in quantity or quality from those naturally existing.

In investigating the nature of inflammation, it seems to me that too much attention has been directed to its obvious signs, viz. redness, heat, swelling, and pain; and too little bestowed on the other character above-mentioned, viz. alteration of the natural action. The former are not only seldom all appreciable, but also very variable in their degree, and even in their existence, so that no one of them can be considered essential; and three of them, viz. redness, heat, and swelling, attend another very different condition of the capillary apparatus, viz. excitement; while the latter invariably attends inflammation—can generally be ascertained—and indeed is often its only symptom. Whatever be the function performed during health, it is perverted or suspended as soon as its organ becomes inflamed. Thus the stomach ceases to digest—the kidney to secrete healthy urine—the retina to receive the impressions of light—the muscles to contract—and if the part perform no living office excepting its own nutrition, there is here also a change, the first visible sign of which is, that the arterial blood is no longer converted into venous. Now, if this remarkable character of inflammation had been kept in mind, pathologists would hardly have spent so much labour in disputing about contraction and dilatation of the vessels, since it is obvious that mere difference of capacity, though it might to a certain extent account for the redness and swelling, could never enable us to explain the alteration of function, any more than a knowledge of the size of capillary vessels could instruct us as to the mode in which their secretions, &c. are performed during health. But even granting that the change in appearance is all that requires to be explained in inflammation, I think it might be easily shown that the theories hitherto adopted, and doctrines founded upon them, are quite insufficient for the purpose.

Though Harvey and his immediate converts naturally enough attributed the circulation of the blood to the power of the heart exclusively, it has been long determined by physiologists that there must be some other agent. Indeed, when we reflect on the variable force with which the blood moves over the system—sometimes running to this organ, sometimes to that one—to the muscles—to the brain—to the stomach—to the organs of generation, &c. it is impossible to believe that the whole mass of fluid owes its motion to one impulse.

In accounting for the additional agent which it is thus necessary to admit, physiologists first directed their attention to the arteries, and attempted to prove, by analogy between the appearance of the middle coat of these vessels and that of the intestinal tube—by observation of their capacity at different times, and under different circumstances—and by the effect of irritants, chemical and mechanical—that they possessed a contractile power, not only elastic but irritable. I certainly think that the circular fibres of arteries more nearly resemble the elastic tissue than any other in the system; but as I am far from holding that muscular structure is essential to irritable contractibility, and as a very fair case has unquestionably been made out in favour of their possessing this power, I am willing to admit that they possess it. Unless the arteries dilate in proportion to their alleged contraction, it is plain that the quantity of blood transmitted through any part of them so affected will be diminished, instead of being increased. Those, therefore, who advocate the motive power of arteries assume that they do dilate proportionally. But this assumption is altogether gratuitous, since the only contraction of these vessels, for which there is any respectable evidence, occurs slowly and gradually, not appearing sometimes until several hours have elapsed after the operation of those circumstances which are supposed to induce it, and not suffering any sudden remission. But even granting that the arteries possess this alternate action, shall we then be able to account for the circulation through bone, or understand how it goes on when the arteries are ossified or converted into rigid tubes by the deposition of calcareous matter in their coats, that common or rather usual occurrence of old age? There are many more objections which might be urged against the motive power attributed to the arteries. Some of these I shall have to mention by and bye. In the meantime enough has been said to show that the existence of the power in question is assumed without proper evidence, and that, even if it did exist, it would be insufficient for the effect attributed to it.

The next accessory power I shall notice is that so ably advocated by Drs Carson, Barry, &c. viz. the pressure of the atmosphere. Not to enter into any formal argument against this ingenious, but, in my opinion, very frail theory, I will merely observe—what is a sufficient objection to it in respect to our present purpose—that it does not account for the fact of local determination, since the sucking power of the heart, if it exist, must, like the propelling one, act on the whole mass of blood.

The heart and great vessels then being inadequate to carry on the circulation, we must next inquire how far the capillaries are concerned.

To prove that there is a motive power resident in the capillaries, it is sufficient, after what has been said, to show that the blood occasionally flows in larger quantity and with greater force to particular portions of the system. But this is an occurrence so frequent and well known as to require no illustration. We see instances of it continually, from the slight and passing tide of shame, or the more permanent erythematous blush which instantly follows a severe local irritation, as the actual cautery, to the steady and exhausting flow which nourishes some monstrous growth at the expence of the rest of the body. If farther evidence were required to prove the existence of this power in the capillaries, I might appeal to the facts of absorption, to the motion of the blood in animals which have no heart, to the circulation of the fœtus, or to the ascent of the sap in plants ; and if there should still be any doubt, I would then bring forward the *experimentum crucis* of cutting out the heart of an animal, and examining the capillary circulation with the assistance of a microscope. I have repeatedly seen the globules continue in motion through the capillaries of a frog for forty minutes after the whole heart was excised. And this motion was not uniform either as to direction or velocity, in which case the gradual contraction of the large vessels might have been supposed adequate to account for it—but sometimes this way, sometimes that—at one time quick, at another slow—and always continuing quickest as well as longest in the smallest vessels—while in health the motion of the blood is slowest in the capillaries.

What is the nature of this power ? Is it muscular or some other sort of contractility, as almost all physiologists tell us ? The same objection applies here as in the case of the arteries. The existence of such a power is altogether matter of assumption. If it is constant it ought to lessen the quantity of blood transmitted, and if it alternates with dilatation, the contents of the vein ought to move in successive undulations. In this case also we ought to discern through the microscope not only a change in the capacity of the capillaries, but an oscillatory movement of the globules passing through them. Instead of this, we see the capillaries apparently quite rigid and immoveable, while the globules shoot through them in such a free unconstrained manner, as to convince every unprejudiced observer that they are not impelled by a *vis a tergo.* If we attribute the capillary movement to contraction of the vessels, how can we account for absorption and the circulation of plants ?

But granting that the power of the capillaries depends on contractility, how shall we account for the obvious phenomena of inflammation ? If we suppose that in inflammation the actions of the part are increased, there ought to be contraction or paleness instead of swelling and redness ; wherefore, Allan, Vacca, W. Philip, Hastings, &c. have told us, that inflammation must depend on debility, since the vessels are larger, and therefore weakened in their contractile power. But by parity of reasoning the common state of excitement must be debility.

I think then it will be allowed, that even supposing it were sufficient in explaining inflammation to account for the obvious symptoms of redness and swelling, it is impossible to do so satisfactorily, on the grounds that the circulation of the blood is owing to contractile power of the vascular system, whether it is thought to reside in the heart, arteries, capillaries, or all of these together. But returning to my original position, I maintain that redness and swelling ought to be secondary considerations in the investigation of the inflammatory state, in comparison with the grand distinguishing character of *altered function.* It is obvious that the explanation of this important symptom, requires a previous knowledge of the mode in which the actions are performed during health. This we do not, and probably never will possess. Next to knowing what a thing is, however, it is desirable to know what it is not; and I think it may be concluded, without rashness, that the various secretions, the evolution of heat, the conversion of arterial into venous blood, the nutrition of the tissues, or the functions of digestion, sensation, and muscular contraction, are not owing to a difference in the capacity of capillary vessels, or any difference in their mechanical condition. We must ascribe the processes in question to the agency of life; and if we do this, there can be little objection to calling in the same power to account for the motion of the blood also.

Digestion was formerly attributed to a mechanical power of the stomach, but experiment and observation having proved that it possessed little or no grinding properties, the function in question was referred to a chemical operation. And when it was found that the gastric juice differed from all chemical agents, in acting equally on the most dissimilar substances, and in wanting all the characters which accompany chemical activity, physiologists were obliged to humble themselves in their ignorance, and refer digestion to the power of life. By the same way we have come to the conviction, that muscular contraction is owing neither to chemical explosions, nor to mechanical expansions, but to the power of life. Now, it seems to me that we have no less reason to ascribe the capillary circulation to the same power. We cannot explain it satisfactorily by referring it to any others that we choose to assume; we have proof that this one exists, then why should we hesitate? It may be said that we cannot conceive how the power of life induces the blood to move. Can any one explain how galvanism induces fluids to move? I believe not; and yet the experiments of Reuss, * together with the more recent and still more satisfactory researches of Dutrochet, have ascertained, that if two portions of fluid be connected with the two poles of a galvanic battery, one will move towards the other through a considerable obstacle,—as a thick mass of clay, a compact membrane, as a bladder. Life resembles galvanism in many of its properties,—it subverts chemical combinations,—it induces muscular contractions,—and why should it not also have a motive power over fluids?

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* In the last number of this Journal there is a very distinct abstract of these experiments, in which it is stated that they have not been attended to in this country. I do not mean to question the truth of this observation in general, but think it right to mention, that I have for several years past shown them in my class.

If we attribute the capillary circulation to the power of life,—to the same power, namely, which all agree causes the various changes nutritive and functional that occur in these vessels,—then the state of inflamed parts will admit of an explanation somewhat more consistent than that usually given.

The life or nervous energy of a part being disturbed, the usual actions or changes which result from it in health are suspended or perverted; and we observe an alteration in its nutrition, in its function, and in its circulation.

ART. XIV.—*Thoughts on Contagion.* By THOMAS MASTERMAN WINTERBOTTOM, M. D. (*Continued from p.* 102.)

IN the list of contagious diseases, we find *phthisis pulmonalis*,* though not generally acknowledged as such in this country; yet we meet occasionally with such melancholy instances of the disease following close attendance upon a near relative or friend, even in those not apparently disposed to it, as must excite considerable apprehension on the subject. No prudent physician would allow a young and healthy person to sleep in the same room with a patient in an advanced stage of phthisis, where it can be avoided; and certainly he would not permit the same bed to be used at any period of the disease. In the south of Europe it is universally dreaded; and at Naples a public *ordonnance* † commands the clothes, and even the furniture, used by such as have died of phthisis, to be burnt on the sea-shore. An infringement of this order is punishable by confinement in prison, or condemnation to the gallies. ‡

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* Grundzüge zu einer Pathologie der ansteckenden Krankheiten, von Dr Fr. Chr. Bach, a very interesting work, containing many curious and important facts; and of which it may be sufficient to remark, that it is ushered in by a recommendatory preface from the learned Kurt Sprengel.

† Qui tabe pulmonari laborant, consanguineos suos facile inficiunt si cum illis consuetudinem habeant.—(*Ramazzini op. omnia*, 791.) Manet tamen de contagio suspectus morbus phthisis pulmonalis quod evidentia exempla, quorum ingentem possem adferre catalogum, demonstrant.—(*Hildenbrand*, *Ratio Medendi*, i. 159.)

‡ Istruzione al publico sul contagio della Tisichezza, scritta per sovrano com-

Yaws, (*variola magna* of the middle ages? Safathi of the Arabians; termed *Gatoo* by the Africans in the Rio Volta, according to Dr Isert, in his *Reise nach Guinea)* is another disease of the same class happily unknown in Europe. This disease is noticed by Piso under the title of Lues Indica, (Historia Naturalis et Medica Indiæ Orient. p. 43.) He remarks, "Sicuti citius sanatur a solis remediis indigenis; ita citius contaminat, quam illa quæ lues Gallica vulgo vocatur et ad incolas hac defertur." The natives cure it, he says, with decoctions of sarsaparilla, and caaroba, sassafras, or guaicum. Bontius[*] ascribes this disease to the too abundant use of cakes made of sago, and the immoderate drinking of Palm wine, but certainly without any foundation. Schilling[†] blamed the use of an agreeable and innocent fruit called Banana. In a good practical paper on yaws inserted in Meckel's Neues Archiv. der Pract. Arzneykunde, and in Richter's Chirurg. Bibliothek, Vol. xii. 340, by Lœfler, that author remarks, that the blacks are more subject to be infected than whites, owing to their bodies being less defended by clothes. He recommends the sarsaparilla; and to promote the eruption of the pustules, he advises small doses of ipecacuan, camphor, warm-baths, frictions, and blisters applied to different parts. Under the indigenous name *Boisie* he describes, not yaws, but the incipient stage of elephantiasis. In noticing this disease, yaws, Dr Bach has committed a slight error, in common with some other writers of deserved reputation, by asserting that it is endemial in the whole of Africa, Amboyna, and the Molucca Islands. But as yaws is communicated in the same way as the venereal disease or the itch, it is just as much endemial in Africa, as lues or itch is in this country. Neither are negroes more disposed to this disease than whites. The same exposure produces the same effects in the European as in the Negro.

Though it is said that pains of the bones are among the first symptoms of yaws, this is not constant; they are rather sequelæ, and may truly be called *Dolores Osteocopi.*[‡] The precursory pains nearly resemble those of febrile complaints, particularly exanthemata; but as this disease is frequently passed through

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mando della facolta medica del supremo magistrato di Sanita di Napoli. Napoli, 1782. See also Zimmermann von der Erfahrung, p. 389. Similar ideas prevailed also in Germany, as may be observed in the work entitled Goettingen, geschildert von Dr K. F. H. Marx. p. 325, Note 6. Jos. Frank, Praxeos medicæ Universæ Præcepta, Vol. ii. p. 509. Burserii Instit. Med. Pract. Vol. iv. p. 54.

[*] Hist. Natur. Indiæ Oriental. cap. xix. de Tophis gummatis, et ulcerationibus endemiis in Insula Amboyna et Moluccis præcipue; quas nostrates *d'Amboynse Pocken* vocant.

[†] De Morbo in Europa pene ignoto, quem Americani vocant yaws.

[‡] Conradi Grundriss d. bes. Pathol. u. Therapie, ii. 826, is wrong in asserting

in childhood, when it is milder in its symptoms, the precise mode of attack is less noticed. Another very common error, not unfrequently committed, is in making a distinction between yaws and pians,* as if different diseases, though only stages of the same malady. Neither do yaws ever change, as asserted by some, into the *mal rouge de Cayenne*, so named from the copper-coloured spots which appear on the skin devoid of feeling, and are considered as one of the primary symptoms of tubercular lepra. Dr Sprengel† observes, "a remarkable kind of leprosy was known in the middle ages, the *Nakha* of Abelkasem, or the Alopecia of Vitalis de Furno and others. Large red vesicles or pustules appeared in the face; the gums swelled and bled; and everywhere spongy bleeding ulcers broke out, which destroyed skin, flesh, and bones. The *mal rouge* of Cayenne is a remnant of this disease." Bajon refers the *mal rouge* not to elephantiasis, but to the pians in its most obstinate form, which he also distinguishes from yaws. But it is clear from the great deformity of the face, occasioned by the prodigious thickening of the skin, the tubercles of the lips, ears, &c. that it belongs to elephantiasis, and to that variety of it called leontiasis. The radesyge, spedalskhed, of Norway, liktraa of Iceland, and the disease of the Crimea, acknowledge a similar origin.‡ Professor Haase distinguishes between yaws, *sycosis*, and pians, *thymiosis*, which latter he considers to be a more obstinate disease, and more localised than yaws. Although he quotes no authority, he asserts that the pians are originally endemic only in one district on the coast of Guinea, the kingdom of Sanguin, which I presume is meant for a small portion of coast south of Sierra Leone, and bordering on what is called the *Kroo* coast.§ The disease of

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that these pains affect only Negroes, and not Europeans. The symptoms are the same in both, though the Negro is most likely to suffer in consequence of neglect or improper treatment. I knew a European in Africa, a slave trader, who was dreadfully tormented with pains of the bones, in consequence of yaws. Bertrandi likewise, in his excellent work on contagious disease, is wrong in asserting, page 73, that Europeans are more difficultly affected with yaws than Negroes; and still more in affirming, p. 105, that a man, being infected with yaws, prevents the disease from breaking out by removing to a temperate climate. In this respect no difference occurs between yaws and syphilis.

* Frambœsia Guinensis, et Frambœsia Americana, Sauvages, Ed. Daniel, v. 205.

† Handbuch der Pathologie, iii. 577. Harless, Handbuch d. aerzt. Klinik. ii. 507.

‡ Consult Sprengel Beytr. z. Gesch d. Medizin. Jos. Frank Prax. Med. Universæ Præcepta.

§ Haas Ueber die Erkenntn. u. cur. d. Chron. Krankh. Vol. iii. p. 386. Dr Ludford also, in a very good essay on this subject, (Diss. Inaug. de Frambœsia, Edin. 1791,) entertains the same strange opinion of yaws being *endemial* only at Sanguin. "In ista Africæ regione, quæ *Gangines* vocatur, *endemice* grassari videtur, omnemque ætatem, potissimum vero infantilem, puerilem, ac juvenilem, adoritur.—Contagium a Ganginibus in omnes Indiæ occidentalis insulas, et in yaws is still imperfectly known, not owing to want of opportunities for observation, but perhaps to the loathsomeness of the complaint, and the risk of watching it too narrowly. To aid the inquiries of future observers, I subjoin some queries given to me by my learned and excellent friend, the late Dr Willan. "Is the yaw pustule a small hard knot inflamed around, and slowly suppurating? How long is it in breaking? Does the fungous flesh in rising force off the primary crust or slough? If it does not itself suppurate, how can it be covered with a slough or scab? Does the primary ulceration surround it, and communicate the crust all over it? But how can it reach the top of the fungus? Is it through pores in its substance? What part does the disease appear upon? and which are generally first affected? Do any symptoms of general disorder precede or attend its eruption? What are the symptoms or sequelæ when it proves fatal? Does it affect the throat, nose, or lips? Is there any specific time in which a single pustule goes through its course? Is there any difference of appearances in children and adults? At what age is an infant ever infected?"

As inoculation has been often practised with success, and found to communicate a milder and more tractable disease, a few well narrated cases would no doubt be very satisfactory.

The intrepid African traveller, Hornemann, whose untimely fate I fear we must now deplore, notices the venereal disease as occurring only once during life in the same subject, which undoubtedly refers to yaws. Brown also, in his travels in Africa, says, "those who have been once infected and fully cured, are, it is said, in no fear of reinfection." This he describes as lues, but it evidently belongs to yaws.

Professor Sprengel, in a very important Essay * on the probable origin of syphilis on the south-western coast of Africa, endeavours to prove that yaws was known during the middle ages, and often confounded with symptoms of lues,—an opinion entertained by Haller, who says, "omnibus computatis, lues venerea videtur degeneratio esse morbi *yaws* Americæ et insularum potissimum Antillarum indigeni in iis insulis etiam nunc superstitis, qui pariter tubercula per universum corpus exigit."†

Americam, in quibus admodum frequens est. invectum est."—"In that part of Africa called Gangines (Sanguin?) it appears to prevail endemically, affecting every age, but chiefly infancy and youth. The contagion has spread from the Gangines to all the West India Islands and America, where it is extremely common."—Conradi Pathologie und Therapie, Vol i. p 821.

* Beytrage zur Gesch. der Medicin. 3. st.

† In support of the opinion that yaws and lues were somehow intermingled, or that lues is an hybrid disease, and arose from a mixture of yaws and leprosy, Professor Sprengel remarks, that the leprosy was very prevalent among the Spanish

Numerous objections offer themselves to this opinion; neither is it at all probable, that a cyclic disease, like yaws, which runs a certain course, and admits of a natural cure, can be commuted into a perennial disease like lues, which terminates only with the destruction of the subject it attacks. One of the learned professor's arguments is, that the ancients might be supposed to be acquainted with yaws, if we could only prove that they had any communication with the south-west coast of Africa, where he supposes yaws was endemic.* The Carthaginian Admiral Hanno, who lived in the beginning of the fifth century before our æra, probably during the reigns of the first Xerxes and Darius Hystaspes, is the first whom we know to have discovered this part of the coast. He planted a Punic colony in the Island of Arguin, and advanced as far as Cape Palmas, in the kingdom of Sanguin, and perhaps as far as Cape Three Points. We have, indeed, no account of any trade with this part until the fifteenth century, when Pedro de Cintra, in 1462, discovered Cape Mesurado. But long before this period it might have been known to the Greeks, Romans, and Arabians, by the trade carried on with the western coast, through the great marts in the midst of Africa, Moorzook, Timbuctoo, Galam, Kaschna, &c. Sprengel next considers the early appearances of lues, which often showed itself as an epidemic, (in which, if he be correct, it totally differs from yaws,) independent of coition, and often proved speedily fatal on the first attack. In process of time, since 1497, it has become more mild, showing itself rather as a cutaneous disease; until finally, in 1520, being combined with gonorrhœa, it became much less dangerous. From the number of quotations given, one may be selected as particularly curious, from Scanarolus, to prove that lues infected without coition, though little consonant with our present creed. "Nos tamen vidimus et omnes hoc sciunt, quod et plurimi, atque puellæ virgines, atque etiam senes, qui nunquam coitum tentaverant, cum hoc morbo correpti sunt, primum in pudendis cœperunt pati." The oldest writers compared the disease with small-pox, or *Herpes miliaris*, or safathi,† sometimes with the berry-like fungi,

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Jews, who were banished from Spain in 1492 into Africa, where they might become infected also with yaws; for it appears that these unfortunate people, among other equally unfounded charges, were also accused of spreading the venereal disease. The hypothesis of Harless, that the yellow fever originated from a union of the endemial or tropical fever, with yaws, is quite untenable.

* Instead of confining the disease to an insignificant corner of Africa, Sanguin, for which no good authority can be adduced, if the learned Professor had asserted, what is at least a very probable conjecture, and which cannot be refuted, that yaws occurred at an early period in all parts of Africa, though not endemially, he would have succeeded better in his ingenious speculation.

† Safathi was originally applied to the αχωρες of the Greeks, and was first used by Jahiah ebn Serapion in the ninth century; but Professor Sprengel, who derives sa-

framboesia, or with leprosy itself. Ali ben Abbas, (son of Abbas) commonly called Hali Abbas, who, in the tenth century was physician to Mostanser, khalif of Bagdad, describes the safathi as a malignant ulcer, covered with a thick tenacious matter, of an infectious nature, which chiefly appears about the back and face like large pocks, equally contagious with them, but not accompanied with so violent a fever. The disease, he adds, occurs frequently in Africa and India, and terminates in violent pains of the bones. It produces also a malignant ulcer on the soles of the feet, which he calls *vena saniosa*, but which Sprengel supposes to be what is termed crab yaws. This he considers as the first trace of yaws which we have on record, though he thinks it is still more clearly described by a writer who flourished a short time after Ali, (born about sixteen years before Ali's death,) the celebrated *Scheikh Reyes*, (prince of physicians,) Ebn Sina, commonly called Avicenna. He describes the disease as a collection of ulcerous or varioloid pustules, itchy, but rather attended with pains of the bones, and with no violent degree of fever. When these pustules are moist, he calls them by a Persian word signifying a *fat root*, which excites a suspicion of the lardaceous base of the ulcer. A very large pustule or *mama yaw*,[†] he names from its elevation, or resemblance to unripe dates. Another appearance of the disease, which occurs on the soles of the feet, *crab yaws*, he compares to the fruit of the turpentine tree, describing it as a callous ulcer with fungous excrescences and varicose distension of the veins.

Although the two diseases, yaws and lues, be essentially distinct, there is a variety of the latter known little more than thirty years ago, called Scherlievo,[‡] which in its strawberry-like

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fathi from a Hebrew root, signifying hill or rock, rather understands it as defined by the Persian writers, Ali Abbas and Ebn Sina, and thinks Gentilis da Foligno must hint at this, when noticing *variolas magnas chronicas*, in Africa without fever. Lues appeared originally in the form of this safathi, or *variola magna*; Le Maire names them *gros Boutons sans fleur*; in Germany *groote bladder*; and hence the French name la grande verole.—Beyträge zur Geschichte der Medicin. 1. B. 3s. stück.

[*] The mama yaw is a pustule or sore which has increased more than the others, corroding the surrounding parts, from which a livid kind of fungus arises, not painful, but resisting for a time every application. Nielen (Verhandlingente Haarlem, deel xix. st. 2. p. 135, in sammlung auserlesener abhandl. z. gebr. pract. aerzte.) observes, this kind of yaw (*lues mater*) always appears on the part where the disease has been received, whether by wound or ulcer,—an assertion which appears to me very doubtful. This writer is incorrect in asserting yaws to be hereditary, and that only such *whites* contract the disease, without infection, whose parents have previously had it. Harless Handbuch der aerztlichen Klinik, iii. p. 507. 1826.

[†] The Medicinisch-Chirurg. Zeitung for 1821 gives a very copious and satisfactory account of this disease.

[‡] Giornale di Medicina, 1812, par Brera—Nuovi Comment. di Medicina, par Brera—Saggio sulla Malattia del distretto di Scherlievo, di Claudio Ant. Bovi. Richter diè specielle Therapie, vi. 414.

fungi bears some resemblance to yaws. Frambœsia Illyrica or the Scherlievo disease, is so called from the place in Italy where it first attracted notice. The natives of Scherlievo maintain that the disease was introduced there in 1790 by four soldiers and two women returning from the war in Turkey. From this place it spread along the coast, from Fiume and Buccari as far as Novi, until the year 1800, when it fixed the attention of the Austrian government. The disease is very common in Illyria, where it always arises from infection, though seldom from coition. The mouth and throat are first affected with slight inflammation, succeeded by hoarseness; small pustules like aphthæ appear on the inflamed parts, which break and pour out a corrosive ichor, leaving round ash-coloured ulcers, with hard, dark red edges, which in time destroy the neighbouring spongy bones. The pain in swallowing is trifling, but the inflammation often spreads to the larynx, occasioning *phthisis laryngea.* Sometimes pains of the bones precede, which diminish or disappear when a pustular eruption shows itself of copper-coloured spots, or sometimes of a violet colour, that discharge a fluid forming crusts, which, when they fall off, leave a yellow mark or ulcer. Tubercles also appear, which pour out a viscid matter forming crusts. Occasionally, fungi arise like strawberries or mulberries, *carnes luxuriantes moriformes,* which suppurate and spread, destroying the neighbouring bones. These are chiefly seated on the hairy part of the head, forehead, ears, pudenda, abdomen, and inside of the thighs and legs. Condylomata occur round the anus. There is tumour of the scrotum or *mons veneris,* and ill conditioned ulcers arise on the soles of the feet. The disease yields to a mercurial treatment, in which the corrosive sublimate shows itself most active in arresting the progress of the disease, though it is said not to be permanently successful. The Scherlievo disease differs from lues, by remaining stationary for several years when left to itself, or even admitting of a natural cure. From sibbens the scherlievo disease differs, in being less destructive to the parts affected, and not so much attended with glandular affections. Dr Ludford is inclined to consider yaws as allied to *sibbens* or *sivvens,*—a disease met with in the northern parts of Scotland, (sivven being in the Highlands a common name for a wild rasp.—Gilchrist, Ed. Lit. and Phys. Essays, iii. 163.) which he terms Frambœsia Cromwelliana, because it is said to have been introduced by Cromwell's army into the Highlands. But Dr Ludford contradicts himself; for in his accurate diagnosis, he sufficiently points out the total difference of the two diseases. Besides, it may be asked, from whence did the Protector's army bring the disease?

The frequent mention of plague and pestilence by all old historians might excite surprise, did we not reflect that every disease, especially if accompanied with fever, which proved very commonly fatal, was termed plague. In Gruner's[*] learned work we have many curious instances of epidemic diseases, explained according to the prevailing superstition of the times. It is probable many of these alarming epidemics were merely instances of typhus; and Hildenbrand accords with Haller in considering the Athenian plague of Thucydides to have been only an anomalous and very malignant typhus, [*ü. d. ansteck. Typhus*, p. 22.] Notwithstanding the number of authors who have written upon this subject, and Ploucquet, in his laborious[†] work, gives a list of more than 800 writers upon plague, no certain diagnostic of the disease has yet been pointed out. Hence the justice of the remark of Chenot, "Omne quod habemus signum in serie et congerie præcipuorum saltem symptomatum consistit, quæ simul non existunt, nec eadem in singulis inveniuntur[‡]."[§] Hence, in every instance, at the commencement of an epidemic plague, we find violent disputes have arisen respecting the nature of the disease, which, for the most part, was considered as some variety of common fever occasioned by atmospheric distemperature. Of this, many instances are recorded. Canestrini notices the plague which broke out on the island of Bodrogh in Hungary in 1770. A physician who pointed it out to the magistracy, was rewarded for his acumen by a threat of the gallows, if he persisted in his assertion; another, more supple in his conduct, termed it an epidemic scurvy, until seventeen persons dying in one house proved the correctness of the first opinion. The bitterness of party in persecuting men for their opinions is well shown in the instance of Thomasius, who was driven from Leipsig to Halle, where, in 1692, he fortunately proved instrumental in establishing that justly celebrated university. But the most striking instance of this disagreement in medical diagnosis is recorded in the history of the plague at Venice in 1576.[||] The two celebrated professors,

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[*] Nosologia historica ex monumentis medii ævi lecta, Jena, 1795. The cure performed by the Doctor sent from Vienna (Weynne,) by hanging his royal patient up by the heels, with his breast supported by a cushion on the ground, would not probably be recommended by an archiater of the present day. P. 129.

[†] Literatura Medica Digesta. Tubingæ, 1808.

[‡] Tractatus de Peste. Vindob. 1766, p. 91.

[§] Pestis diagnosis maxime ex ejus contagio haurienda. Dr Wolmar, however, notices streaks of blood in the inner canthus of the eyes, which he considers as diagnostic of the disease, and by attending to which, he was enabled, in some obscure cases, to foretel the disease. The "lingua quasi calce obducta" has been very generally remarked.

[||] Muratori, relating this circumstance in a tone rather sarcastic, says, "Chiamati colà da Padova Girolamo Mercuriale e Girolamo Capodivacca, pubblici lettori, e gran di *Barbassori* dell' arte medica, a spada tratta sostennero, quella essere influenza epidemica, e non vero contagio, contro il parere de' medici Veneziani. Cagion fu il

Mercurialis and Capo di Vacca, being sent for from Padua, pronounced most decidedly that it was not plague ; but the mortality increasing in an alarming degree, the two professors were glad to escape as privately as possible to avoid the fury of the mob. The same occurred in the plague at Marseilles in 1720, when the professors of Montpellier sent there declared that fatal disease was not plague. In the above instances, and in numerous others, the disease was regarded as common contagious fever, and treated as such; until the appearance of bubos or petechiæ, and an increased mortality, induced them to apply to it the name of plague. One of the best definitions of an early date which I have seen of plague is given by Bassianus [*] Landus : " Pestis nil aliud est quam lues grassans in multos, aut in una, aut in pluribus regionibus, cum diris symptomatibus, juncta cum febre pestilenti, aut hecticâ, aut putrida." Speaking of the petechiæ which occurred, he remarks, " illa exanthemata siue impetigines non sunt semper eiusdem coloris, nec semper manifestò apparent." A contemporary writer, Francesco Frigimelega, [†] describing the same plague, which he asserted always arose from contagion, defines a pestilential disease to be one which almost always proves fatal, and is contagious. [‡] To guard against the contagion, he adds, " non si appropinquino a lo ammalato se non quando bisogna, et non rifiarino incontro. Guardinsi anchora dalli loro Panni." Such was the general terror inspired by this disease, that every peculiar appearance in the atmosphere, or any natural occurrence different from the usual course of things, was considered as an infallible indication of a future plague. Diemerbroek, in his learned and interesting work, gives many curious instances, which were considered by the terrified multitude as indisputable warnings. None were, however, more extravagant than what seems to have been regarded by them as a species of second sight among children ; undoubtedly a proof of a strong phlegmatic temperament. Gal-

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credito di amendue, che non si prendessero le più rigorose precauzioni contra di così orrendo malore, finchè si giunse a vedere tutta piena di morti quella gran città. Se scornati non fuggivano que' due satrapi della medicina, fu creduto, che il popolo li avrebbe sacrificati al loro furore." Annali d'Italia, Vol. xv. p. 8. On this subject some doubt is entertained by Sprengel, Gesch. der Arzneik, 3 th. p. 123. A contemporary writer, Gio. Battista Susio, says the above professors denied it was a pestilence, (che affligena alcuni pochi in Venetia;) and Susio also declared that it did not merit that name, because it did not afflict many at the same time, nor persons of all ranks. p. 8. Libro secondo del conoscere la pestilenza. In Brescia, 1579. Waldschmidt de sing. Pestis Holsaticæ, Haller Disputationes, v. 549.

[*] De origine et causa Pestis Patauinæ, anni 1555, published during that year at Venice.

[†] Fr. Frigimelica, Consiglio sopra la Pestilenza in Padoua dell' anno 1555.

[‡] Pestilenti chiamo quelle che ammazzano et danno la morte quasi sempre, e sono contagiose. Conradi, Handbuch d. allg. Pathologie, 57.

lus Tridentinus observes: "Pueri ab intelligentia non errante ducti, presbyterorum modo cantant, alios vivos pueros sepelire simulant, hanc universam animantibus perniciem futuram præsagientes." Mercurialis gives a similar account, and Forestus remarked a like presage to announce the plague at Delft: "Pueri antea colludentes, scrobes, instar sepulchrorum faciebant, et feretra in humeris, ut vespillones portabant; et quanquam hæc et similia ab aliis pro portentis, ab aliis pro nugis habeantur, tamen sævissima pestis subsecuta est." The learned author, Diemerbroek, firmly believed that children, engaged in these plays before a certain house, indicated the death of three children from small-pox, which occurred in it about two months afterwards. Diemerbroek, though influenced by the superstitions of his age, was a man of great learning and unaffected piety, and acted as a truly Christian physician towards his townsmen during that dreadful plague which he describes so well, and for which he was rewarded with cool indifference by his sordid countrymen. But he has left to posterity his feelings on this subject. *

Among the various contradictory opinions respecting plague, none appears more strange than that doubts should exist with regard to its contagious nature; yet these doubts have often been entertained by men of undoubted talent, and, it must be confessed, that many strong arguments have been alleged to corroborate their opinion. Though we cannot deny the contagion of plague, yet it seems fully proved that the danger of its communication is much less than has been apprehended. Larrey † says, when the disease is slight, there is little or no danger either in touching the patient's pulse, "du bout des doigts;" or in opening bubos or carbuncles, or touching small portions of his body or his clothes, "par de petites surfaces;" nor even in going into his apartment if well ventilated. Dr L. Frank, ‡ a contagionist, in a work on this subject which deserves to be seriously read, gives many striking instances of the sudden disappearance and occasional inertness of plague contagion. Among others, he observes that the French army arrived at Cairo in 1798, only thirty days after the cessation of a severe plague; and though in the hospitals the beds, clothes, &c. of the Mamalukes were made use of, not a single case of plague occurred during that year. Upon this subject Dr Wolmar § informs us, "that about the summer solstice the south winds and sirocco, which had prevailed during the time of the plague,

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* De Peste, p. 84.

† Mémoires de Chirurgie Militaire.

‡ De Peste, Dysenteria et Ophthalmia Ægyptiaca. Vindob. 1820.

§ Abhandl. ueber die Pest. 174.

ceased, and were succeeded by north and north-east winds. A strong dew fell every night, and the disease disappeared. The Europeans, many Christian merchants, and the Cophts, now opened again their inclosures, and many days were passed merely in visiting. The Turks also visited, to congratulate each other, and to renew their commercial ties. The Europeans and native Christians paid visits of condolence to the Turks in their houses, on which occasion they seated themselves without dread upon sofas covered with cotton, which but a few days before would have infallibly communicated to them the plague, though at this time such an occurrence was not heard of,—a sufficient proof how great the influence of the *atmosphere* is in this disease." Moreover, soon after the battle of the Pyramids, Buonaparte and his staff occupied the quarters of Murad Bey, in which, a short time previously, sixty men had died of plague, yet none of the French suffered from contagion. Pugnet informs us also that Buonaparte, to diminish the fears of the soldiers, touched bodies infected with plague. Upon this subject Desgenettes more particularly says, "Se trouvant (le general en chef) dans une chambre etroite et très encombrée, il aida à soulever le cadavre hideux d'un soldat dont les habits en lambeaux etoient souillés par l'ouverture d'un bubon abscedé."[*]

The sudden disappearance of plague in Turkey and Egypt is a fact acknowledged by all parties, and has given rise to a saying among the Franks, *Saint Jean venir, Gandoufandar.* The learned Professor Omodei,[†] one of the most zealous defenders of contagion, does not deny the above fact, but explains it by asserting, that it is owing to a diminution or want of susceptibility, (difetto di suscettivita negli individui) in the subjects. The active powers of contagion always remain unchanged, he asserts, and admit of no diminution. But how the susceptibility of an entire nation for disease can be so exactly graduated, as at one time to be suddenly excited, and again equally as suddenly extinguished, appears to me inexplicable. We had much better confess our ignorance of the cause, though we must allow the fact, of the sudden disappearance of plague. The strongest argument which the contagionists can oppose to the above, is, in my opinion, the perfect immunity which those persons enjoy who observe a strict seclusion during the prevalence of a plague epidemic. This was particularly noticed in the great plague[*] at London, where those who took refuge on ship-board escaped the disease. We may here be allowed to remark, that those who have denied the contagious nature of plague cannot be accused of a wish to mislead others, or to make themselves conspicuous, merely by supporting a novel opinion. They have generally been the first to expose themselves to the danger, and in too many instances have fallen victims to, what I conceive to be, an erroneous opinion. But would it be proper to stigmatize the memory of such men as having been rash and unthinking? Or would we patiently bear aspersions to be thrown upon the character of our countryman Dr Whyte, who, in his attendance upon the sick of contagious diseases, discharged his medical duties with a zeal and courage that justly entitled him to the gratitude of all who knew him. He fell, it is true, a victim to what the cold-hearted might term want of prudence; but it might, perhaps, have been better for the public, if every physician had, with equal honesty, tested his peculiar notions upon himself, before he practised them upon his patients. Of one martyr to the cause, however, it would gratify me much to see the memory rescued from the supercilious contempt which has been thrown upon it. I allude to an Italian physician, Dr Valli, a name not unknown to science, and deserving of a better fate. Professor Thomassen à Thuessink of Groningen, in his very able treatise on contagion, stigmatizes Dr Valli as "dissipated, depraved, or abandoned." In the German translation by Dr Gittermann he is called "den ruchlosen Valli!"[†] a very harsh term to be applied to deceased merit, and very unbecoming of the learned professor. Dr Valli appears to have been a man of a cultivated mind, and overflowing with ardour for his profession. Being an enthusiastic admirer of vaccine inoculation, and imagining that the prevalence of natural[‡] small-pox and plague was influenced by a kind of mutual repulsion between the two diseases, he flattered himself with having discovered a specific for the latter disease in the vaccine matter. To prove the truth of his opinion he went to Constantinople and shut himself up in a pest-house, from which he narrowly escaped with life. He made many experiments by inoculating with mixtures [*] of small-pox, vaccine and pestilential matters, which he promised to publish, but which are now, it is to be feared, lost. We have the respectable testimony of Dr Granville, who was present, that Dr Valli inoculated himself with impunity with a mixture of vaccine and plague matter; and though some affected to raise doubts respecting the real nature of the latter, yet, if we may judge from the determined courage and sanguine character of Valli, they seem to have been unfounded. In consequence of these trials, a nostrum was advertised for sale as a preventive of plague; but it is not clear that Dr Valli had any concern in it, at least not from sordid motives. But an apothecary at Constantinople was accused of preparing, as a specific for plague, an ointment, composed, as it was pretended, of vaccine and plague matter, to be used by such as put faith in Dr Valli's supposed discovery. The apothecary was at length denounced and put to death, probably in the usual way, by strangling,—a mode of punishment too lenient for such a delinquent. A more severe method ought to have been adopted, the most dreadful of all to a medical man, that of being compelled to swallow his own remedies. After Dr Valli's return from Constantinople, he took a voyage to the West Indies, to bring himself in contact with yellow fever, whose contagious nature he denied. Unfortunately, however, he caught the disease, and died only a few days after landing at the Havanna. The medical society of that place, much to its honour, attended the obsequies of this extraordinary man, and erected a monument to his memory. [†] A republication of Dr Valli's works on plague, now out of print, with a biographical sketch of the author, by some of his learned countrymen, could not fail to prove an acceptable and interesting present to the medical world. In a moral point of view we all err, though each in a different way; but in a professional point of view, surrounded as we are with uncertainty and doubt,

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[*] Hist. Med. de l'Armée d'Orient, p. 49.

[†] "A tutti è noto come cessata un epidemia contagiosa, il morbo non ripullili quantunque non siasi praticato l'espurgo generale delle Masserizie e robe che hanno potuto ricevere il contagio."—Annali di Medicina, Vol. xxiv. p. 226. How does the above agree with quarantine regulations?

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[*] "Nous avons remarqué que ceux qui se renfermoient sains chez eux, en sortoient sains."—Chicoyneau Traité de la Peste, 195. Gutfeldt Einleitung in die Lehre v. d. ansteck. Krankheiten.

[†] *Ruchlos*, impius, perditus, profligatus. Sine spe pænitentiæ, sive resipiscentiæ. Ruchlos leben, perdite vivere. Frisch, Teutsch-lat. Worterbuch. In Dutch, Zedelijk slecht, d. i. heilloos. rockeloos, bij voorb. Homo. Cic. Arch. 6. tu profligatissime homo. Schelleri Lexicon Latino-belgicum, curante D. Ruhnkenio.

[‡] Each of these epidemics recedes as the other appears. The time when the plague shows itself at Kairo and its vicinity, is called *chamsin*, an Arabic word signifying fifty, because at this period the sirocco and south winds usually blow for fifty days. The proper mode of reckoning these fifty days is to commence from the vernal equinox, being the time when the plague appears in Constantinople, Lesser Asia, and also in Egypt. But the Egyptians reckon from the Easter of the Greeks, which falls eleven days later than that of the Latins; neither do they trouble themselves whether the feast occurs early or late, in March or in April. The small-pox prevail at Kairo every year before the chamsin begins. When they are mild, not much is to be apprehended from the plague, even although a plague patient should be intro-

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duced into Egypt from the neighbouring countries. But if the small-pox be malignant, much diffused, and occasion many deaths, the plague also, when introduced by contagion, makes great havoc.—Wolmar ueber die Pest. p. 12.

[*] Med. and Chirurg. Review, Vol. xi. lxxiv. London Med. and Phys. Journal, Vol. x. 475.

[†] For an account of Dr Valli's death, see Med. Chirurg. Zeitung for 1817, ii. 125.

what man can tell the extent of his own errors? Amidst the obloquy thrown on the memory of this zealous inquirer, it is gratifying to find that the celebrated Omodei with more justice observes, " a tutti è noto che il valoroso Valli, ricco d'Esperienza su di questa materia, sosteneva non essere contagiosa l'aere respirata dagli appestati." [*] And Hildenbrand, a name which ranks high in medicine, speaks of " the celebrated Professor Valli of Mantua, well known as an accurate observer." [†]

In early times the prevalence of any unusual complaint was commonly referred to idle tales of poisoning; and Livy [‡] libels the sacred character of the Roman matrons by such an accusation. In more modern times this reproach has been usually appended to religious disputes; and at the beginning of most public calamities, especially plague epidemics, the unfortunate Jews seldom escaped their share of persecution, of which too many instances are related by the older historians. Diemerbroek mentions some unfortunate wretches, compelled by torture to accuse themselves of smearing the doors of houses, &c. with a putrid compost, chiefly obtained from bodies dead of plague. Paulus Jovius, [§] an Italian writer of the sixteenth century, describing the siege of Naples, though he expresses some disbelief in it, refers the great mortality of the besiegers, evidently caused by a bilious remittent fever arising from marsh miasma, to the corrupt state of the air, and to the water being poisoned by certain herbs infused in it by Moors and Jews. Those who drank of this water, he adds, had swellings of the belly and legs. Their faces became yellow, thin, and so much shrunk, that with difficulty the soldiers could recognize their friends. The sickness began in the camp on the 15th of July, and spread from the soldiers to the officers, who, alarmed for their safety, quitted the place. The only well authenticated instance I have heard of an attempt to communicate plague to an individual by pestilential matter occurred at Tunis in 1795. [||] A Turkish physician, excited by envy, collected a quantity of pestilential matter in a rag, and put it secretly into the pocket of M. Gersonius, a Swedish surgeon. This was not discovered until three days after, when, searching for an instrument, he got it in his hand. Without thinking of the consequences, he threw the rag into his garden, where it was smelled at by his dog, which in four or five hours became sick. The dog was well rubbed with oil, notwithstanding which, bubos appeared on the second day. They were opened as soon as maturated, and the dog recovered. Gersonius, with a very proper spirit, in order to have an opportunity of studying the nature of plague, refused quarantine quarters, which were offered to him; and attended between 600 and 700 patients in that disease, of whom 150 had bubos. He appears from his letter to have escaped unhurt, though, so far from shunning contact with the sick, he had patients who died in his arms, whilst he was administering their medicines.

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[*] Peste di Smirne del 1784.

[†] Ueber d. a. Typhus, p. 76.

[‡] Hist. Rom. L. viii. c. 18, he properly adds, " Prodigii ea res loco habita, captisque magis mentibus, quam consceleratis, similis visa."

[§] The original work was printed at Strasburgh in 1556, about four years after his death. In the Spanish translation printed at Valencia in 1562, it is said, " Algunos soldados de extrema malicia, assi de los Espanoles que eran de genero Moriscos, como de los Tudescos que eran de genero de Judios, con cumos de yeruas venenosas, echando encima mucha simiete de Lino, y Trigo gastado y corrompido, havian inficionado los Pozos, mas cerca del Real de los Enemigos, y todas las cisternas."

[||] Schwedische Annalen v. Med. u. Naturgesch. von Rudolphi, Vol. i. p. 53. 1799.

Why plague has been referred to the exanthemata is not very clear, unless from the occurrence of carbuncles[*] and petechiæ, neither of which are of constant appearance; indeed, the latter more frequently accompany typhus. Whether " the tokens, botch, purple swellings," belong to petechiæ or carbuncle is not easily determined. The *spots* or *purples* when punctured emitted a little blood; the tokens were rather hard and insensible when punctured. Defoe[†] describes them to be " gangrene spots, or mortified flesh in small knobs, hard as a piece of callus or horn," and certain forerunners of death. Carbuncle is a species of furuncle of a malignant form, which speedily terminates in gangrene. Sometimes it appears in a vesicular form, like those which precede gangrene, or like pemphigus, containing a yellow or dark coloured fluid. At first it has not an inflamed base, but about the second day the skin becomes red and tumefied, but depressed in the centre. The vesicle gradually increases to the size of a hazel-nut, or even to that of an egg, before it bursts, showing a black eschar or slough, which, with the inflamed margin, continues to increase until suppuration be fairly established between the dead and living parts.[‡] Orræus[§] says, " Carbunculus siccus cum sphacelo senili—maximum similitudinem habet." Persons of a fat spongy habit are most subject to carbuncle.[||] It appears chiefly on the back and loins,

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[*] Schmalz Diagnostik in Tabellen, p. 228. A similar work could not fail to be useful to the English student.

[†] Defoe, p. 225. Hodge's Account of the Plague, 133, 137.

[‡] Galen gives a very accurate description of carbuncle, Vol. vii. p. 719, of the beautiful edition of the Greek physicians now publishing by Professor Kühn of Leipsig. (Medicorum Græcorum Opera quæ extant, Lipsiæ.) Pliny, lib. xxvi.—iv. first introduced from Gallia Narbonensis; called *charbon provençale.* Commentar. de rebus in Scientia Naturali et Medic. gestis, Vol. xxiii. p. 396.

[§] De Peste, p. 98.

[||] Grohman. In this disease, Lodovico Locatelli, Trattato della Peste, &c. Padoua 1630, says, " me però piace grandemente l'estrattione dell' inguinaglia con il ferro appropriato a questo, benche sia *un poco doloroso.*" When an anthrax supervened,

often on the breast, abdomen, or extremities, but not on parts covered with hair. It differs from bubo in always requiring some degree of fever to produce it. The treatment is precisely the same as that of gangrene, to increase the tone of the system, and thus enable the living parts to throw off the dead. The practice of scarifying, practised very generally, is reprobated by the best writers. Diemerbroek, with his usual humanity, remarks,—" et semper carbunculos, quo mitius tractabantur, eo citius curatos fuisse."[*] When not numerous, they probably have a similar effect to those mortifications on the sacrum and glutæi in typhus which very commonly prove a crisis to the fever.[†] Dr Schneider,[‡] a very accurate observer, remarks, that furuncles and ulcerations appearing in typhus, have usually good effects, showing probably a disposition in the disease to change from a general to a local affection; and in plague, when neither bubos nor carbuncles occur, the disease is usually fatal.[§] Further, in typhus, swellings of the parotids and other glands frequently prove critical, and relieve all the bad symptoms. This was particularly observed in the Dresden epidemic of 1814. In plague, bubo sometimes affects the gland itself, and destroys it, but more frequently the cellular substance surrounding it is only affected,—an observation made by Larrey and others. Dr Grohman has seen all the salivary glands affected with bubo except the sublingual; and of the conglobate glands, he has observed all but the *glandulæ poplitece* to be susceptible of inflammation.

Hippocrates considers bubos in fevers to be bad;[‖] and Hildenbrand remarks that the early appearance of enlarged parotids in typhus is dangerous (p. 170.) Though swellings of the glands are not always evident, it is no evidence that they do not exist. If the parotids be accurately examined, they will be found in some degree affected with *engorgement* or pain, producing difficulty in opening the mouth, dulness of hearing,

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he recommended a fontanel to be made upon it. He concludes, " ma sono diuoto del fuoco, con il quale si sono sanati dall' anguinaglie tutti li apestati nell' esercito dei Greci sotto Troia intorno gli anni del mondo 2800, li quali sono amorbati per la esalatione velenosa della terra." Another author on the treatment of bubos, says, " Alcuni li danno el focho e scotanlo con la candela accesa discolandoli suso la cera, e questo non e ben facto perche la cera prohibisce la traspiratione de li humori. Ma meglio seria dargli el fuocho con lo ferro infocato o vero con auro."—Celsus de Medicina, Ed. Targæ, p. 258.

[*] See also Larrey Chir. Milit. iii. p. 153; Chenot, p. 180.

[†] Chenot, however, mentions the appearance of petechiæ in some cases of plague without bubos or carbuncles, yet none died.—Tract. de Peste, Vindob. 1766.

[‡] Ueber den sporad. typhus u. das Wechselfieber. The same opinion is held by the learned Vogel, Handbuch, der pract. A. ii. p. 71 and p. 93.

[§] De Peste iii. c. xiii. 186. See also Samoilowitz, Pugnet, &c.

[‖] Aphor. 55, sect. iv.

noise and buzzing in the ears. There is also a frequent discharge from the ears on recovery from typhus.[*]

Petechiæ, though they have occasioned plague to be ranked among the *exanthemata*, are not, strictly speaking, of the eruptive kind, being merely effusions under the skin. They are by no means constant attendants of plague any more than of typhus; and when they do occur, they are accidental symptoms, not in the least changing the nature of the fever. Yet Professor Omodei has attached a degree of importance to them to which they are not entitled. To support his opinion, that all contagions are of a permanent and unchangeable nature, and of foreign origin, he instances petechial contagion,[†] as he terms it; and which, with his usual erudition, he endeavours to prove was unknown to the Greek, Roman, and Arabian physicians. A contrary opinion, however, has been held by men of equal learning and accuracy of observation, of whom I shall only notice here the names of Gruner[‡] and Willan.[§] Whether the slight notice of Hippocrates[||] refer to petechiæ or not, is perhaps not quite clear; though we may observe, that the ancients were far from being careful in discriminating cutaneous eruptions, but usually comprehended them all under the general term *exanthemata*;[||||] and as the learned editor of the Annali di Medicina allows that petechiæ were confounded with morbilli, even so late as the end of the sixteenth century, it is no wonder if in earlier times they should be little noticed. Even until very lately a similar negligence has occurred with respect to morbilli,[¶] rubeola or roseola, and scarlatina, which have been occasionally mistaken for each other, especially the two latter.[¶¶] Hence may have arisen the supposition, that measles and scarlatina appear more than once in the same subject, or at least have made the exceptions to the general rule more numerous. Omodei endeavours to fix the first appearance of petechiæ in Europe, to Italy, in or about 1477–8, or the beginning of the sixteenth century, during the well known pestilence.[*] They appeared in the course of the same year in Germany and in England; and to this disease the learned writer[†] refers the Sudor Anglicus of 1485.[‡] But although Omodei supports his opinion of petechiæ being a new and idiopathic disease at that period, by references to an immense number of contemporary writers, and maintains his position with his usual candour and good temper, yet there still remains much obscurity upon this interesting point.[§] If petechiæ be enumerated by most writers as a frequent symptom, though neither constant nor characteristic of plague, when, it may be asked, did the petechial contagion unite itself to that of plague, so as to constitute one disease? Or must we suppose two species of plague, one with and the other without petechiæ? In typhus fever petechiæ frequently occur, but they are usually regarded as symptomatic[||] only, more especially since they very commonly do not appear till late in the disease. We have no satisfactory proofs that petechiæ are contagious, like the fever which produces them, or that the fever becomes more infectious when petechiæ[¶] have appeared. Professor Omodei, however, entertains a contrary opinion, and wishes to establish a specific petechial contagion, which he affirms, in common with all other contagions, is permanent and incapable of modification. In denying that syphilis in early times was ever propagated as an epidemic, or that it had ever assumed any appearances different from those which occurred subsequent to 1495, he asserts that such transformations in the essential characters of contagious diseases are contradicted by analogy, which shows that no contagion has ever been in the least changed, or even rendered milder by length of time, change of climate, or any other cause. This opinion does not appear to me to accord with our experience. Of febrile contagion we yet know little more than its effect in producing fever, and its origin, perhaps universally, from living animal matter. If, therefore, it arises always from one source, it is not unreasonable to conclude that it must always be of one kind, though of different degrees of intensity. The fever excited by this matter applied to the human body may differ in some unimportant circumstances, in different countries and subjects, but is essentially the same in all.

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[*] See also Burdach vom Baue und Leben des Gehirns, sec. 323. Dreyssig Handwörterbuch der Medicin. Klinik. iv. p. 295.

[†] L'esser incapace d'indicare il donde e il quando la Petecchia è stata per la prima volta introdotta en Europa non è sufficiente motivo per rifiutarle un origine esotica. Annali di Medicina, Vol. xxii.

[‡] Morbor. Antiquitates, p. 110.

[§] On Cutaneous Diseases, 470.

[||] Hippocr. Lib. p. 674, 697, 795, 865, popularium. Ed. Vander Linden, i. p. 849. Baldinger selecta opuscula in quibus Hippocrates explicatur, p. 220.

[||||] Glossaria in Hippocratem. Ed. Franzius, p. 48, 434. Fæsii Œconomia Hippocratis, p. 131.

[¶] Raimann, Handbuch d. spec. u. Med. Pathologie u. Therapie, ii. 52. Selle Rudimenta Pyretologiæ, p. 171. Jos Frank de Rubeola seu Rossalia. Prax. Med. Vol. i. p. 260. Henke Handbuch d. spez. Pathologie, Vol. ii. 79.

[¶¶] Sprengel, Institutiones Medicæ, Vol. iv. p. 416. Dr Willan on Cutan. Diseases, 433.

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[*] Brunner is said by Haller to be the first German who notices petechiæ, "Primum Germanorum febrem peticularem habere."—Biblioth. Med. ii. 226. But it seems doubtful whether he does not rather allude to scurvy. See Gruner Morbor. Antiquitates, p. 117.

[†] Battista Susio notices the epidemic petechiæ of Bologna in 1540, which infected only the inhabitants, and did not spread to the neighbourhood. Del conoscere la Pestilenza, p. 45.

[‡] Ellis's Original Letters, Vol. i. 296.

[§] According to Dr Friend, the sweating sickness appeared in 1483 at Milford, in the army of Henry VII. recurring four different times, the last time being in 1528. "In the following year, 1529, neither before nor afterwards, it showed itself in Holland and Germany." Opera omnia, p. 316. Parisiis, 1735. Petechiæ are not noticed among the symptoms. Gruner, Morborum Antiquitates, p. 65.

[||] Reuss. Wesender Exantheme, i. 37. Note.

[¶] Soemmering, de Morbis Vasor. Absorbent. p. 27.

A person infected by contagion is incapable of communicating it to another until some time after it has, in the first instance, excited a degree of fever. This period is uncertain. Some assert * that even the contagion of small-pox is incommunicable before the seventh day of the disease. The contagion of typhus, and also that of plague, can only be produced by a febrile state; and there is reason to believe that every febrile state, by whatever name it is designated, may, by improper treatment, by crowding the sick into a small space, by neglect of ventilation and cleanliness, be made to communicate the contagion of typhus and in certain countries that of plague. The peculiar contagion of the exanthemata cannot be produced by any known means, but even to them the typhoid contagion may be superadded. The remittent fever of Sierra Leone was certainly not contagious; but I had grounds for suspecting that it might run into a typhoid form. The worst cases of fever which occurred there were in seamen, who had by ill treatment been obliged to run away from slave ships. These people were generally wretched, squalid, and filthy. In them the remissions were always obscure, often imperceptible, appearing to form a kind of intermediate stage between remittent fever and typhus.

But it may be objected that typhoid contagion may exist in persons apparently in health. A very low degree of fever, however, and such as scarcely attracts notice, may suffice, as is exemplified in the exanthemata. For instance, many persons are thought to be unsusceptible of the contagion of small-pox, measles, &c. because they have passed through life without any visible appearance of eruption. In this supposition, however, there is some degree of fallacy; for the eruption is not the cause but the effect of that peculiar change, which can only be produced by fever, which gives security in future against these cycloid diseases. In many instances this eruptive fever is so slight as not to excite suspicion of the nature of the disease, and in infancy it is readily attributed to other causes. Besides, in typhus, we ought not to estimate the degree of fever solely by the increased action of the heart and arteries, but rather by the affection of the sensorium, as indicated by headach, stupor, depression of strength, &c. which do not always bear a relative proportion to the state of the pulse. In plague epidemics people have been observed

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* Unzer Pathologie der ansteck. Krankh. p. 150.

to walk about without fever, feeling no inconvenience, except the pain arising from bubos or carbuncles. This has induced some to suppose that fever is not essential to plague; but it may perhaps rather depend, in such cases, upon the bubos and carbuncles proving a crisis to the fever.

The variety of names applied to different kinds of fevers afford no advantage to the practical physician,[*] and are disregarded at the bedside of the patient; for, however different in name, the practice in fevers is founded upon the same general principle. The treatment of contagious typhus does not at all differ from that which has been found most successful in plague; and we find they have been so often mistaken for each other, by men of the highest professional skill, that we are led to suspect the two diseases to differ only in name. Chenot[†] asserts that plague shows itself at first with the common symptoms of typhus, followed sooner or later by bubo, carbuncle, or petechiæ. Many of the cases related by Diemerbroek and by Orræus might pass for mild forms of typhus, of which Diemerbroek's own case, " quasi fulmine tactus," and the few cases rather too briefly related by Dr Wittman,[‡] may serve as instances. Dr Mackenzie, who resided many years at Constantinople, declares that the common pestilential fever of that city resembles our jail fever, and is only called plague when accompanied with bubos and carbuncles.[§] Yet no certain diagnosis[||] can be founded on these appearances of bubo, &c. because they do not always occur, especially at the beginning of an epidemic. Glandular swellings are very prevalent in Syria, as Dr Wittman informs us, where plague is not suspected; and it is not improbable that fever occurring in any of these cases might excite suspicions of plague.

Plague has been supposed by some writers to bear a close affinity to yellow fever; but they differ in some essential points. The first arises from and is propagated by contagion; whilst it now seems pretty generally agreed, that the latter arises independent of contagion, and is not spread by it.[¶] Yellow fever is said[¶¶] to prevail from the 23° of south Lat. to 46° north, requiring a continued heat of 84° for its production; but this degree of heat is sufficient to extinguish plague. On the contrary, a changeable temperature, inclining to cold, is destructive of yellow fever. Plague can maintain itself in excessive degrees of cold. Mindererus[*] was present at the plague of Ismail, during the most severe winter ever remembered there. All the attendants on the sick died except the gipseys, who were said to preserve themselves and children by bathing daily in the icy water of the river.[†] Eton makes a curious remark, that the further east a country is situated, the less frequently it is visited by plague, which also is said never to appear, probably spontaneously, where the olive does not grow. It may indeed be remarked, that extremes of heat or cold, unaccompanied by moisture, rarely produce disease. Great heat alone will not excite yellow fever. It did not occur at Sierra Leone during my residence there, though the requisite degree of heat existed. I have reason to believe that the ill effects of walking for a length of time under a vertical sun will be first experienced in the bowels by painful tenesmus, with an almost irresistible desire to evacuate them; thus laying a foundation for dysentery.

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[*] Selle, Pyretologia, p. 52.

[†] De Peste, pp. 89, 91.

[‡] Travels in Turkey. Kortum de vitio scrophuloso, Vol. i. 260.

[§] Wolmar, p. 229.

[||] Grohmann, Beobacht. ü. d. im Jahr, 1813, Pest zu Bucharest. pp. 82, 85, 96. Lud. Frank, 67.

[¶] Schreiben ueber das gelbe Fieber von Osgood.

[¶¶] Sick. 110.

The striking resemblance between plague and the pestilential disease of horned cattle, called in this country murrain; in Germany, rinderpest, (cattle plague)[‡]; hornviehseuche, (horned cattle contagion;) and provincially, löserdurre, has frequently attracted the notice of physicians. Indeed it was remarked, at a very early period, that epizooticks often preceded[§] or followed contagious diseases in the human subject, between which there was thought to prevail a strong analogy. Like plague, too, they have been supposed to be endemial in the east, and introduced from thence, to spread over all parts of Europe. The pestilential diseases incident to animals as well as the human subject have been classed under five distinct heads. 1. Oriental plague; 2. The variolous disease; 3. Plague of sheep (Schaafpocken;) 4. Oriental cattle plague; 5. Occidental plague, or yellow fever. The epidemic disease of cattle is not only contagious, but it is also communicable by contagion to the human subject, producing carbuncle of a malignant kind, often attended with typhoid fever, extensive sloughing of the cellular substance and gangrene, in many instances speedily terminating in death.[||] Lancisi referred the origin of the epidemic which in 1711 proved so fatal in Italy to a Hungarian ox brought to Padua by some Dalmatian drovers.[¶] The parallel so accurately drawn by Professor Sick[¶¶] between the oriental cattle disease, as he terms it, and the occidental plague, shows in a very remarkable degree the strong resemblance of the symptoms in each disease. [*]

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[*] Abermahl ein Beytrag zurheilung der Pest.

[†] Account of the Turkish Empire.

[‡] Reuss. Wesen der Exantheme, i. p. 4.

[§] Noticed by Hodges as preceding the great Pestilence.

[||] Hoffman der Milzbrand, oder contagiose carfunkel der Menschen, 1827. Harless, Handbuch, d. Aerzt. Klinik, ii. 256.

[¶] Ramazzini de Contagiosa Epidemia, &c.

[¶¶] Kr. Beleucht. u. Wurdig. d. Europ. Pestkrankheiten, page 160.

Hungary labours under the opprobrium of having frequently poisoned the cattle stalls of the Continent; in all parts of which, in consequence of these frequent plagues, public attention is immediately attracted by the first appearances of sickness among the cattle. Sanitary laws are established for the purpose of guarding against contagion, and placed under the surveillance of medical men skilled in veterinary practice. It has been remarked that foreign troops quartered in a place, or even marching through a country, although they appeared to be in perfect health, have introduced or excited febrile contagion. Ships of war often become sickly, by merely having strangers, though apparently in health, introduced into the crew. The same has been observed in cattle. Pilger [†] relates that he had seen 500 head of Hungarian cattle, all in apparent health, except somewhat fatigued by driving; yet these animals introduced a fatal disease among all the cattle where they chanced to pass the night. The same happens in Russia when cattle are driven from Kasan to Moscow. Hence it appears that a great number of cattle crowded together may produce a contagious matter, as is also observed in hospitals crowded with human subjects. [‡] During the period between 1812 and 1815 the *Rinderpest*, or murrain, prevailed extensively on the Continent, and in consequence, Russia, Poland, Silesia, Bohemia, Saxony, and many of the small German states suffered great devastation. After the battle of Leipzig, the disease proceeded with the advancing armies across the Rhine, and showed its destructive powers even in the vicinity of Paris. Camper referred this cattle disease to a poison of foreign origin, producing effects similar to the plague, spreading from one country to another, and manifesting itself by a train of symptoms indicating disorder of the sensorium. It has been doubted whether the flesh of such animals may be eaten with safety. We see this done with perfect impunity by gipsies and similar outcasts; but it may be considered as put out of doubt by the numerous experiments of Camper, that the flesh of cattle which have died of murrain is perfectly harmless when cooked. *

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[*] That the flesh of diseased cattle may be eaten with safety is further proved by Goelicke, de Lue contagiosa bovillum. Mauchart, de Lue Vaccarum. Tubing. 1745. Halleri Disputat. Likewise, Ens de Morbo Bovem Ostervic, pro Peste non habendo, contains many judicious though caustic remarks. He says, the flesh of these animals was very generally eaten by the peasants, especially " a Batavis (gente, utpote. valde œconomica et lucripeta, ne quid pereat) et sane! optime ipsis cessit negotium hocce, nec de morbo quodam conquesti unquam." Halleri Disp. v. *in fine.*

[†] Unzer Einleitung zur algemein. Pathologie, 416.

[‡] Goettingen im Med. Phys. ū hist. hinsicht geschildert. von Dr K. F. H. Marx. p. 323.

Germany during the late severe struggle, in addition to the horrors, inseparable from war, heaped upon her in more than due proportion, was ravaged by a contagious typhus, very aptly termed war-plague, (Kriegspest,) from its great resemblance to that disease, and which occasioned an appalling loss of human life, as may be gathered from the following account:

In December 1812 and January 1813, there appeared in the Prussian territories the melancholy remnants of that immense French army which so shortly before had breathed defiance to the world, but which was in a few weeks, in the most unexampled manner, almost annihilated by cold, hunger, and the extreme of misery. More dead than alive, these former conquerors of the world, enervated and emaciated, appeared first in Lithuania and Silesia, bearing the terror of the Almighty in their countenances, and still more in their hearts; frozen in their limbs, physically and morally dead. The world had never before witnessed such a superabundance of human misery compressed into one point, nor had we ever seen it represented by such dreadful effects. It was not disease, that expression is too weak; it was the last sigh of human nature afflicted and tormented to death. They sunk with a general tremor, a total exhaustion of strength, destruction of the mind and nervous system, torpor of the skin, fever, petechiæ, and colliquative diarrhœa. Numbers were the prey of death; most of the survivors carried away chronic diseases; and certainly, of those who saw the conflagration of Moscow, not one returned without the germ of death in his vitals, or at least bearing in his physical powers a life-long reminiscence of that dreadful day. †

Though the disease was generally acknowledged to be a malignant typhus, yet great diversity of opinion prevailed respecting it; some considering it to be a sthenic, others an asthenic disease; some referring it to inflammation of the brain, others of the abdomen. The late Dr Marcus of Bamberg, a man of talent and observation, but very ardent in support of his

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* Pilger Handbuch der Veterinärwissenschaft. 1803. Ramazzini de contagiosa Epidemia. Reuss. Heilung u. verhutung d. Kinderpest. 401. The beneficial effects of sluicing the cattle with cold water is very strongly pointed out.

† Hufeland, uber die Kriegspest, p. 53. As a companion to the above, the "Historia Febris Gallicæ Castrensis" by Scrinci, which occurred among the French under Marshal Bellisle at the siege of Prague in 1742, deserves to be noticed. (Halleri Disputationes, V. 387.) The deplorable and filthy state of the French hospitals, and the appalling loss of 30,000 men by fever, owing apparently to an obstinate and perverse attachment to a system of practice decidedly in opposition to common sense, might almost lead us to doubt whether medicine has been a blessing or a curse to mankind.

opinions, could only see in this disease the prevalence of the sthenic diathesis, and referred it, as well as every other case of typhus, to inflammation of the brain, which opinion is in some degree still followed. Marcus shed torrents of blood in defence of his doctrine, and no doubt was gratified with the success of his practice.[*] Other physicians, however, deservedly eminent, cured their fever patients likewise, but by a very opposite mode of treatment.[†] The inference to be drawn from these conflicting opinions is, that nature can bear a great deal; but how much we have yet to learn.

(To be Continued.)

ART. XV.—*On the Tests of Prussic Acid.* By EDWARD TURNER, M. D. F. R. S. E., &c. Professor of Chemistry in the University of London. In a Letter to the EDITORS.

GENTLEMEN,

HAVING occasion a few weeks since to consult the essay of M. Lassaigne on the detection of the prussic or hydrocyanic acid in the body of animals poisoned with that substance, I was surprised at observing a chemical error, which, unless corrected, may give rise to serious mistakes. A short notice on this subject is the more necessary, as the essay in question has been inserted without comment in some of the British journals, and is therefore likely to be consulted by the medical jurist in this country. I beg leave, therefore, to offer a few remarks, intended to correct the mistake into which M. Lassaigne has inadvertently fallen, and render his otherwise valuable essay a safe guide to the medical public.

In the report of M. Lassaigne's essay by MM. Thenard, Magendie, and Vauquelin, published in the *Annales de Chimie et de Physique*, xxvii. 200, three tests are specified,—nitrate of silver, sulphate of copper, and *per*sulphate of iron. Nitrate of silver yields with hydrocyanic acid a curdy white precipitate, the cyanuret of silver, which is so similar to the chloride of silver, that it is distinguished from it with difficulty. On this account M. Lassaigne properly objects to its employment. In employing the second test, a few drops of sulphate of copper are mixed with hydrocyanic acid, a slight excess of pure potash is added, and the blue precipitate redissolved by the least possible excess of muriatic acid. The cyanuret of copper, formed by the action of the precipitated oxide on hydrocyanic acid, then comes into view, and subsides in flocks of a nearly white colour to the bottom of the vessel. The third test is used in a nearly similar manner. The persulphate is mixed with hydrocyanic acid, the peroxide thrown down by means of a slight excess of pure potash, and the precipitate redissolved by an excess of sulphuric acid. Prussian blue then makes its appearance either instantly, or after an interval of twelve or even eighteen hours, when the hydrocyanic acid is in very minute quantity. The same tests are referred to by MM. Leuret and Lassaigne in their joint essay in the Journal de Chimie Médicale, &c. No. xii. p. 561.

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[*] Harless, Handbuch d. Aerzt. Klinik, i. 208.

[†] Bach, Grundzuge der ansteck. Krankheiten, 79.

The observations of M. Lassaigne, in reference to the sulphate of copper, are quite exact; but the *persulphate* of iron is not suited to the purpose for which it was proposed. The precipitated peroxide of iron, as was long since proved by Scheele and Proust, does not yield Prussian blue with hydrocyanic acid. In my experiments with a strong solution of prussic acid there was not the least trace of blue, not even after an interval of twenty-four hours. It is easy to be satisfied of this fact by operating in the following manner:—To a concentrated hot solution of green vitriol add successive portions of nitric acid, until the dark, nearly black, tint at first produced is converted into a red. Evaporate the solution to perfect dryness, dissolve the persulphate in water, and filter. On mixing a little of this persulphate with prussic acid and solution of pure potash, as above described, and dissolving the precipitate with sulphuric acid, the solution will present the yellow colour of the salt of iron without any Prussian blue being generated.

To the formation of this pigment by means of prussic acid, the presence of protoxide of iron is requisite. The protoxide appears to act by converting the prussic into ferro-prussic acid; and for this purpose a very minute quantity suffices. Accordingly, if persulphate of iron should contain a little protosulphate, it will detect the presence of prussic acid; or if in the potash or prussic acid any impurity happens to be present, such as traces of sulphuretted hydrogen, which may convert a little of the peroxide into protoxide of iron, Prussian blue would then also be produced. Prussic acid itself appears to effect this change slowly; for when the peroxide is precipitated in contact with that acid, and then redissolved, the solution, after an interval of two or three days, acquires a faint blue tint; and the same appearance takes place in twenty-four hours, if the precipitated oxide has been previously in contact for a few days with prussic acid. But these changes, though chemically interesting, are too slow and imperfect, even with strong solutions of prussic acid, to be practically useful as a test. These observations will explain how the persulphate of iron happens to have been recommended as a test of prussic acid, though in fact it is not so.

The proper test of prussic acid is the common *proto*sulphate of iron, the green vitriol of commerce. If recently prepared, the precipitate left after dissolving the excess of oxide will at first be green, and become blue after exposure for a few minutes to the air. But if the solution has been previously kept for some hours in an open vessel, so that it may contain both oxides, perfect Prussian blue will be formed at once. The protosulphate of iron, even in cases of judicial inquiry, is the only chemical re-agent required. M. Lassaigne recommends sulphate of copper as a re-agent twice as delicate as persulphate of iron,—an opinion which is quite correct. But it is considerably less delicate than the protosulphate; and besides, the white tint of the cyanuret of copper is far less characteristic than the rare and well-marked colour of Prussian blue. Sulphate of copper, as a test of prussic acid, is therefore unnecessary. These remarks render it probable, that, in animals killed by prussic acid, the poison may be detected at longer periods after death than was observed in the experiments of MM. Leuret and Lassaigne.—I have the honour to be, Gentlemen, your most obedient servant, EDWARD TURNER.

London, *August* 13, 1828.

PART II.

CRITICAL ANALYSIS.

Art. I.—*Traité des Maladies du Cerveau et de ses Membranes, &c. Treatise on the Diseases of the Brain and its Membranes.* By A. L. J. Bayle, D. M. &c. &c. Mental Diseases. Paris, 1826.

De La Paralysie considerée chez les Aliénés, &c. Of Palsy in the Insane, from researches made in the service of the late M. Royer-Collard and M. Esquirol. By L. F. Calmeil, D. M. &c. &c. Paris, 1826.

It has been very generally imagined that mental derangement might take place without any morbid state of the brain demonstrable by inspection; and some have even gone so far as to assert that it consists in a morbid train of ideas only, totally unconnected with the material condition of the brain or its membranes. In favour of these opinions, the principal arguments are of the following nature:—*First*, it is said persons after remaining some time insane have completely and often permanently recovered the use of their reason; *Secondly*, in persons who have died insane it is impossible in all instances to find, either in the brain or its membranes, traces of morbid change adequate to account for the perversion of ideas and judgment; and, *thirdly*, though in others who have died insane, and in whose brains various marks of diseased structure were found by Morgagni, Meckel, and Greding, the same changes have been found in the brains of others who retained the perfect use of their faculties to the last. Dr Ferriar especially may be mentioned as one who has collected a considerable number of facts illustrative of this conclusion.

Though to various authorities these arguments have appeared of variable force, yet the persuasion in favour of the opinion, that insanity is independent of the morbid state of the brain, has been very general. In proof of the truth of this proposition, it is unnecessary to go further than some of the most popular treatises on mental derangement, in which, from Arnold, Crichton, Perfect, Pinel, and Haslam, to Esquirol, O'Halloran, and

Burrows, the main object of inquiry is not so much to ascertain the pathological nature of the disorder, as to trace its origin to certain remote causes, physical and moral, and to determine the proportion of cases which originate from each. Without any wish to undervalue this species of inquiry, it may be said, that, though the knowledge of remote causes is of great moment in the treatment of diseases, it is not only incomplete, but may be exceedingly injurious, unless the physician endeavours to trace the manner in which they tend to derange the functions of the animal body, or of any of its organs. Haslam, indeed, though he gives the remote causes due attention, and speaks with sufficient scepticism of the inquiry into the proximate, expresses a decided opinion that insanity is not a *disease of ideas*, and is among the first who, in modern times, has ventured to regard it as connected with disease of the brain or its membranes.* Dr Marshall had previously expressed the conviction, that insanity always depends on disease of the brain; and has left in his posthumous work some of the proofs in which this conviction was founded.†

It is not improbable that some of the misconception on this head may depend on inaccurate notions of the sound structure of the organ, and of the degree and nature of the deviation requisite to constitute insanity. It is not by demonstrating what are called organic lesions, that is, *distinct and obvious changes of structure*, that the pathologist is in all instances to explain a permanent state of mental aberration. A much smaller and less obvious degree of change may, under certain circumstances, be quite competent to produce the effect. It is justly remarked by Cullen, that the absence of organic lesion in the instances of insane persons does not assure us that no change had taken place in the brain. (1554.) Changes in the state of the capillary system either of the cerebral membranes or of the organ itself, it may be easily shown, give rise to very considerable effects on the faculties of thought and intellect. It is an indisputable fact that in fever, in the meningeal inflammation which terminates in hydrocephalic effusion, and in that which succeeds blows and injuries of the head, the state of the meningeal or encephalo-meningeal vessels is adequate in all cases to produce more or less confusion of thought and judgment, and occasionally complete, though temporary, aberration. In the investigation of the theory of mental disorders, it is probable that too marked a distinction has been attempted to be traced between the delirium of these acute disorders and that which occurs in insanity. The difference, nevertheless, between the two forms of deranged intellect, one of which is accompanied with a general affection of the heart and circulating system, the other without, cannot be a difference in kind. In meningeal inflammation, whether dependent on fever or injury, the affection of the circulating system at large is, so far as the general principles of morbid action demonstrate, the concomitant or the effect of local disorder. We know, however, that local disorders may exist in certain circumstances without giving rise to that general commotion and conspicuous anormal action of the sanguiferous system ; and it is a proper subject of consideration to inquire, whether in the insane, a degree of change in the capillary system of the brain and its membranes, not merely analogous, but quite similar to that which takes place in meningeal inflammation, may not occur independent of any marked disorder in the circulating system sufficient to constitute fever.

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* Observations on Madness and Melancholy, &c. by John Haslam; Chap. v. near the conclusion, p. 238, &c.

† The Morbid Anatomy of the Brain in Mania and Hydrophobia, &c. &c. collected from the papers of the late Andrew Marshall, M. D.

The appearance of the works of M. Bayle and M. Calmeil, with various papers which have lately issued from the pen of the younger Pinel, induces us to give the subject some passing attention. Whatever difficulty M. Pinel the elder may have had, in common with many other eminent physicians, in tracing the several forms of mental derangement to some material or sensible change in the brain or its membranes, this difficulty appears to have diminished greatly in the hands of his son and some subsequent inquirers. The impression appears now to be becoming general among many of those who have studied the phenomena and pathological peculiarities of mental diseases, that though a disordered train of ideas and associations is a prominent feature, this depends invariably on some morbid state either of the meningeal or of the cerebral vessels. It is not improbable that the apparent weakness or defects of this theory, which, upon the whole, is the most rational, and it may be added, the most useful in its practical influence, are to be traced chiefly to deficient or erroneous observation ; and while it must be acknowledged to be unphilosophical to draw general conclusions from a few isolated facts, it is not less irrational to establish general principles while the individual facts are imperfectly observed, equivocal or contradictory. Though in the early stage of an inquiry the facts may be too few, too partial, or too uncertain to justify any general inference, in proportion as by the united efforts of many they become numerous, important, and accurate, they at length form evidence, which, if not irresistible, is at least so strong as of themselves to afford the true explanation of their previous discordance, and of the principles on which they may be eventually generalized. It is chiefly on this ground that we propose at present to take a view of the facts and circumstances which tend to confirm the general inference, that whatever be the form of deranged intellect, under whatever circumstances it takes place, and whatever agents, physical or moral, appear to operate as its exciting causes, its phenomena depend in all cases on a morbid state of the capillary system, either of the brain or of its membranes.

Omitting for the present the researches of Littre, Morgagni, and Meckel, which were directed chiefly to morbid states of the brain as the pathological causes of insanity, the observer finds in the elaborate descriptions of Greding the first distinct traces of full and comprehensive views of the state not only of the general contents of the cranium, but of that osseous case itself, in the persons of the maniacal and epileptico-maniacal insane. According to the researches of this accurate observer, the *pia mater* and arachnoid membrane appear almost never to have been in a state of soundness in the persons of those who laboured under symptoms of insanity. Though in a few (five) the *pia mater* is stated to have been wonderfully pale, in a greater number (nine) it was reddish and inflamed ; and in a number still greater (thirty-five) its vessels were remarkably loaded with dark-coloured blood, either generally or to a greater or less extent of its surface. These appearances, however, are not free from ambiguity ; since much depends on the manner in which death takes place, and on the circumstances in which the individual is placed during the last moments of existence, as to what may be the exact degree of distension of the vessels, great and small, in any tissue.

A much less equivocal trace of morbid action Greding found in the aspect of the *pia mater*, the external surface of which was very frequently white, thick, and mucous, sometimes dry and lardaceous, like the buffy coat of inflamed blood ; while it was generally covered with minute hemispherical bodies, sometimes soft and spongy, sometimes hard, of the size of a mustard-seed, a grain of hemp, or a small pea. In twenty-nine cases did the *pia mater* present this white, thick, mucous appearance near the vertex, and along the longitudinal sinus. In twenty-nine it was altered in the same manner, but to a much greater extent over the membrane. In nine only, however, was it observed over the whole convex surface of the organ, and the plane surface of the commutual region of the hemispheres ; and in a still smaller number (six) was it found to extend round the *cerebellum* and *medulla oblongata*. This white, thick, and mucous aspect depended doubtless, as Greding represents, partly on serous fluid effused into the delicate cellular tissue, between the arachnoid, *pia mater*, and membrane. But in other instances, when the latter was dry, opaque, and lardaceous, he appears to regard it as an albuminous exudation, the result of the inflammatory process.

The minute pisiform or lenticular eminences, which he takes particular pains to distinguish from the *glandules* of Pacchioni, both in situation and in their softer consistence and milky colour, he found in thirty-seven cases disseminated *passim* over the membrane; in twenty-seven cases more copiously and thickly crowded; and in fourteen cases accumulated most abundantly together. These bodies appear to be a product of the inflammatory process; for we have since seen them in circumstances in which the traces of chronic inflammation were distinct and unequivocal. Another appearance of the same nature, recognized by Greding in the cerebral membranes of the insane, was the occasional elevation of the arachnoid from the *pia mater* into minute bladders or sacs by serous fluid effused into the subarachnoid tissue. The subsequent observation of the same phenomena by Haslam and Marshall can leave little doubt of the fact; while its nature is established by its connection with blood-coloured serum, injection of vessels, or actual extravasation of blood, as observed by Greding himself. The total number of cases examined by this physician was 120. *

Similar changes in the cerebral membranes were recognized by Joseph Wenzel of Mayence,† and Chiarugi of Florence. The latter especially, among fifty-nine necroscopic inspections of insane persons, found in fifty-four more or less thickening of the membranes, serous infiltration of the subarachnoid tissue, with or without injection of the capillaries, and serous fluid to greater or less amount in the ventricles. ‡ It shall be afterwards shown that these appearances are the result of vascular congestion or injection.

At a later period much the same results may be seen in the necroscopic reports of Haslam and Marshall. Of thirty-seven cases of insane persons examined by the former, whatever was the state of the brain, the membranes were unsound in all except one, (the thirty-third;) and even in this there is said to have been " a considerable determination of blood to the brain ;"—a sure indication that the capillaries of the *pia mater* could not have been in a healthy state. In twenty-three of these cases the *pia mater* was injected, loaded with blood, more or less inflamed, or otherwise diseased in its capillary system. In twenty-four cases the arachnoid membrane was opaque, in some instances of a milky opacity, in several thickened, and in one-half at least with infiltration into the subarachnoid cellular tissue. Of these twenty-four, thirteen belong to the first class in presenting also traces of injection or inflammation of the *pia mater*. In twenty-one cases serous fluid, varying in amount from two tea-spoonfuls to four, six, and even eight ounces, was found in the ventricles; and of these also it is to be remarked, that ten corresponded with the first class in presenting traces of meningeal inflammation, more or less intense. It is almost unnecessary to say, that the presence of this fluid in the cerebral cavities indicated previous congestion or inflammation of the choroid plexus; and though the choroid was not in all instances much or evidently affected, yet, as in several, it was vascular, thickened, vesicular, or indurated, the appearance of fluid in the cavities was as unequivocal a mark of its having been unsound, as if it had been reddened, injected, or penetrated by extravasated blood. The opacity either in spots or diffusely of the arachnoid membrane, Dr Haslam justly regards as marks of inflammation; and the subarachnoid infiltration is doubtless to be viewed in the same light. In several of the cases the injection of the *pia mater* appears to have gone so far as to produce extravasated patches; (5, 7, 8, 14, 15, 18:) in one case in which the patient died hemiplegic, the right lateral ventricle was found distended with dark-clotted blood, which appears to have issued from the choroid plexus; and in one in which the patient fell down and expired in a moment, much blood was extravasated between the cerebral membranes, apparently from the vessels of the *pia mater*.

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* Melancholico-Maniacorum et Epilepticorum quorundam in Ptochotropheo Waldheimensi demortuorum sectiones tradit J. E. Greding, Cont. 2da Apud Ludwig Adversaria, Vol. ii. P. iii. p. 449.

† Observations sur le Cervelet et sur les diverses parties des cerveau dans les Epileptiques, par Joseph Wenzel, D. M. &c. &c. Traduit par M. Breton. A Paris, 1811.

‡ Della Pazzia, in genere e in specie con una centuria d'osservazioni. 3 Vols. 8vo. In Firenze, 1794.

From these dissections Dr Haslam expresses the opinion, that it may be inferred that madness is always connected with disease of the brain or its membranes. One objection he admits, that it may be doubtful whether the appearances noticed were the cause or the effect of the disease. However plausible this oft-repeated objection may appear, its force will gradually diminish from some considerations which we shall afterwards adduce.

The cases dissected by Dr Marshall much about the same time, but published some years after, furnish results not dissimilar. Of twenty-two cases of insane persons, whose brains were inspected by this anatomist, in twenty-one serous fluid, varying in amount from one, two, or four to twelve ounces, was found in the cerebral cavities; and in seventeen of these twenty-one cases similar effusion was found in the subarachnoid tissue, occasionally to the extent of elevating the arachnoid membrane into minute vesicles or cysts, (cases 6, 8, 9, 18, 22.) Though the *pia mater* is said to have been injected in four cases only, and the arachnoid to have been opaque in two, it is manifest from the fluid effused into the ventricles, or between the membranes, from the vascularity of the substance of the brain, and from the facility with which the *pia mater* was detached from the convoluted surface, that the capillaries of the latter membrane were by no means in a sound state. It is further not unworthy of remark, that in nine of these cases the arteries of the brain were opaque, thickened, steatomatous or ossified,—a condition highly favourable for deranging the capillary circulation of the membranes, or the extosed organ.

These necroscopic reports are important, it must be admitted, in describing the most usual anormal appearances found in the cerebral membranes in the maniacal. By themselves, however, they are of greatly less moment than when taken in conjunction with the results obtained by other observers. It is chiefly when viewed in connection with the researches of M. Bayle and M. Calmeil, that they acquire in the eyes of the pathologist that importance which justifies their reception as uniform facts, and the source of correct general principles.

The former author does not scruple to regard the disease to which he gives the name of *chronic meningitis* as the most fruitful, the most constant, and the most frequent pathological cause of mental derangement. In order to comprehend distinctly what he understands by *chronic meningitis*, it is necessary to explain that it does not designate that form of disease which may succeed the acute meningeal inflammation,—a termination which M. Bayle, in common with Montfaucon and Parent and Martinet, regards as highly problematical; but a disease totally distinct from acute arachnitis, and essentially and primarily chronic or slow in progress and duration, and seated chiefly in the minute capillaries of the *pia mater*, as they pass into the convoluted surface of the brain. We shall advert first to the anatomical characters of this disorder, as the most important and interesting point in the inquiry.

The description of the anatomical configuration, arrangement, and distribution of the *pia mater* and arachnoid given by M. Bayle, it is superfluous to repeat. It is enough to say, that it is quite the same as that which has been more than once given in the pages of this Journal, and which consists mainly in regarding the choroid plexus as an internal *pia mater* pertaining to the central surface of the organ, and receiving, like the external, its proper arachnoid membrane. The intimate connection of the vascular-filamentous surface of this membrane with the convoluted surface of the brain, if clearly understood, cannot fail to show the anatomical physician the facility with which any derangement in its capillary system must affect the brain, and thereby influence in a very direct manner, and to a great extent, its appropriate functions.

One of the most constant anatomical characters of this chronic meningeal inflammation is injection more or less intense, and to a greater or less extent of the cellulo-vascular web of the *pia mater*. The vessels of this membrane are loaded with blood; the smallest when broken allow it to escape in abundance, and the largest are so much distended along the anfractuosities as to resemble small tense cords. The membrane itself is occasionally of a bright red or scarlet, and is so congested that blood trickles from all points on its removal, and appears to be infiltrated into its tissue. Occasionally the serous fluid lodged in its interstices may give it a pale grayish colour, disguising the redness which it would otherwise present; but its thickness and volume, which are always considerable, and the dilatation of its vessels, demonstrate that it is much injected. The serous infiltration, nevertheless, M. Bayle remarks, may be so great as to diminish or partly dissipate the vascular injection. It ought not to be forgotten that it becomes then an indication or effect of the previous injection. The arachnoid so rarely partakes in this anormal condition, that in the experience of the author it presented a reddish tint scarcely once in sixteen or twenty cases,—a circumstance which he ascribes to the disease proving fatal when most of the symptoms of inflammatory irritation have subsided.

The consequences of this injection, however, may be recognized in a large proportion of cases in the form of thickening and opacity of the arachnoid membrane both of the convoluted and of the central surface. Notwithstanding the extreme tenuity of this membrane in the sound and natural state, it may acquire, according to M. Bayle, under the influence of disease, a thickness equal to that of the *pleura*, the *pericardium*, the *dura mater*, or even of the gastric tissues, when it resembles parchment softened in water. This thickness varies in different regions of the membrane. Most considerable toward the convex centre of the hemispheres, upon their inner surface, and near the great fissure, it diminishes gradually near the base of the brain, and disappears on the lobulated region of the organ. In the arachnoid of the choroid plexus the same change takes place though to a smaller extent. But when it is remembered that this membrane is thinner than that of the convoluted surface, the morbid thickening may be equally great in proportion.

This thickening of the arachnoid, M. Bayle declines to ascribe to the deposition of false membrane on its surface, for the following reasons:—1*st*, He has never succeeded in splitting the cerebral arachnoid into plates, or detaching the alleged false membrane; 2*d*, he finds invariably false membrane upon the inner surface of the *dura mater*, and never on the outer surface of the cerebral arachnoid; and, 3*d*, the surface of the latter always retains its natural smooth and glistening aspect, which could not be the case if it were covered by an albuminous exudation.

With thickening the arachnoid is always more or less opaque, either continuously or in patches, which are whitish, or grayish, or of a milky aspect. The membranes are said at the same time to become denser and firmer, and to withstand laceration more powerfully. The correspondence between these changes and those remarked by Greding, but especially by Haslam and Marshall, must be so obvious as to require merely to be mentioned in order to be recognized.

One of the most usual effects of meningeal injection, though not very intense, is to induce serous infiltration either from the free surface of the arachnoid membrane, into the fine cellular tissue between that and the *pia mater*, or from the arachnoid of the choroid plexus, constituting effusion into the ventricles. In the first case it is found, as was observed in several instances by Haslam and Marshall, in the cavity of the arachnoid, that is, between the *dura mater* and *pia mater*. Most generally it trickles down as it is secreted to the base of the brain, and sometimes into the vertebral cavity, so that it appears in the form of a gush of water when the brain is removed. Its quantity varies; but in the base of the brain it is stated by M. Bayle to amount to 4, 6, 8, or more ounces. Effusion in the second situation, the subarachnoid cellular tissue, is scarcely wanting in a single case. It varies in quantity; and the circumstances of its effusion render the appreciation difficult. It is generally most copious at the upper convex part of the convoluted surface, at the margins of the convolutions, and along the *sulci*. It always gives the arachnoid membrane the aspect of being raised by a gelatinous effusion; and when very abundant it elevates this membrane into cysts, vesicles, or bladders. This fluid is evidently discharged from the minute capillaries of the *pia mater;* and its infiltration into the meningeal cellular tissue constitutes a species of œdema. In the third situation effusion of serous fluid is also very common; and though its quantity may vary, and sometimes by incipient dissection may be totally overlooked, it is never totally wanting. If from mismanagement none be found in the ventricles, the enlargement of these cavities is a sufficient proof that they contained fluid which had been forced through the third and fourth ventricles out of its original situation. In about one-third of the cases of M. Bayle its quantity was so considerable as to constitute a chronic hydrocephalus.

Adhesions of the two folds of the arachnoid membrane are so rare that M. Bayle found them scarcely eight or ten times in one hundred instances. These adhesions are seen most commonly in the great fissure. Only once or twice were they seen in the ventricles. In one case in which the disease was complicated, M. Bayle found the two folds of the arachnoid membrane intimately united by the interposition of an albuminous or lymphy patch.

Anormal adhesion of the membranes to the brain, though not a uniform character, forms a frequent complication in consequence of superficial inflammation of the convoluted surface. It is found in at least one-half of the cases, and is known by portions of the convoluted surface coming off with the *pia mater*, to the vascular surface of which they adhere inseparably. These portions vary in extent from the size of a pin-head, a lentile, or a bean, to that of a five franc piece, or even more. They are generally found on the convex surface of one or both hemispheres, and in a few cases only at the base of the organ. The membranes are always much thickened, and uncommonly vascular at the point of attachment.

The portions of brain subjacent to the injected or inflamed membranes are always more or less changed from their natural condition. The extent of this change varies nevertheless according to the degree of serous infiltration and of bloody injection, and according to the presence or absence of adhesions.

1*st*, When the *pia mater* is much injected the surface of the brain is either rose-coloured or distinctly red. Cut into slices, it is always distinctly injected, especially in the gray convoluted matter, which is also softer than in the case of infiltration, but less so than in the case of cerebral inflammation.

2*d*, When the *pia mater* is much infiltrated, and its injection is disguised by this circumstance, the subjacent gray matter appears softer than usual, but in other respects not much changed. Its colour, instead of being rosy, is generally less gray, and is often pale; yet even in this case it may be a little injected.

3*d*, When the membranes adhere to the convolutions, independently of the portion of gray matter which adheres to the inner vascular surface, and which is unequivocally softened, the spot of the cerebral surface from which this is detached, and which takes the shape of a superficial ulcer, is always much softened, occasionally diffluent,—sometimes without sensible change of colour,—sometimes with injection or rose-colour, much more manifest than in other situations of the gray matter.

Under the head of *granulations* of the free surfaces of the arachnoid membrane, M. Bayle describes the same spherical or spheroidal pisiform eminences which Greding had previously noticed in the cerebral membranes of the maniacal. The present author considers them as analogous to the granular or tubercular productions found at the free surface of serous membranes in certain cases of chronic inflammation. In the outer or convoluted arachnoid they were found in not more than one-tenth of the subjects, near the middle of the convexity of the hemispheres, of small size, and perceptible only by strong light. In the cerebral arachnoid he states them to be present in almost all cases. It is manifest, however, that M. Bayle confounds with these bodies a granular state of the gray and white *epithelion* of the optic eminences and striated bodies. Correct observation, we are satisfied, does not justify the inference that this smooth surface is covered with a fold of arachnoid membrane, which is confined solely to the *plexus choroides ;* and the polished uniform appearance is derived from a firm condensed species of cerebral matter, which Reil not inaptly styles *leather-like* or coriaceous, and which, under certain circumstances, is liable to peculiar induration and granular growth. It gives the surface of these bodies an appearance like coarse sand-paper.

Albuminous exudations and false membrane are another effect of the inflammatory process. In the cases of M. Bayle they occurred in one-sixth of the subjects, at the inner surface of the *dura mater*, the whole extent of which they occasionally covered. In other instances they were confined to the convexity of one or both hemispheres, to the falx, or to the occipital region. But they were in no instance found at the base of the cranium only. Their external surface is attached to the arachnoid membrane of the *dura mater* with variable degrees of firmness. Their internal surface is applied, without adhesion however, to the cerebral arachnoid. When thin they are transparent ; when thicker they are whitish, grayish, or yellowish. The red, brown, or black tints remarked by the author must have been the result either of recent formation while they are still vascular, or of transudation. This is proved by the fact afterwards noticed, that in the attached surface it is often possible to trace blood-vessels, and that the black or brown patches are evidently former clots of blood partly absorbed.

Bloody extravasation in the arachnoid cavity,—an indication of hemorrhagic injection and hemorrhage from the arachnoid membrane,—M. Bayle found in about one-eighth of the cases of persons cut off by chronic meningitis. In one hundred inspections they were found only five or six times, occupying more or less extent of the arachnoid of the convoluted surface, consisting of fluid or coagulated blood, varying in amount from one-fourth of an ounce to one or one ounce and a-half. One case only (45) is given by M. Calmeil, in which much blood, fluid and coagulated, was found in the right side all down to the base of the brain. That these hemorrhages are, like those of serous membranes in general, the result of exhalation, is to be inferred from the fact particularly noticed by the author, that no trace either of rupture or erosion could be remarked on the free surface of the membrane. M. Calmeil gives two cases in which the blood was contained in a cyst formed from the arachnoid membrane. This is a species of *hæmatoma meningeum.*

In the case of patches of albuminous exudation, bloody extravasation is occasionally found at their attached surface in the form of reddish, blackish, or brown clots, varying in extent and consistence.

Of the several lesions now enumerated, some are constant, others only variable in their presence. To the former class belong opacity, grayish, whitish, or lactescent colour, and thickening of the arachnoid membrane, infiltration of the subarachnoid tissue, injection of the vessels of the *pia mater*, and more or less serous effusion into the cerebral cavities. To the latter are referred great distension of the ventricles, adhesions of the membranes to the convoluted surface, albuminous exudation, injection of the arachnoid, of the *dura mater*, and bloody extravasation.

Meningeal inflammation, farther, may be complicated with sundry morbid changes in the brain itself. Thus in seven cases various regions of the cerebral substance had undergone pulpy destruction. In one case in the centre of the hemispheres was a fibrous tumour as large as an egg, which compressed the brain all round, and in the environs of which the cerebral matter had become softened and diffluent. Another complication met with by the present author consists in acute *arachnitis*, with suppuration of the base of the brain. In like manner Greding met with pulpy softening *(apostema sui generis*) in the upper part of the right *corpus striatum*, (case 49) ; laceration from blood effused in two instances, and various degrees of lesion of the *thalami* and *corpora striata;* and Dr Haslam, in his 34th case, met with gangrene of the middle lobe of the brain, with much fetid purulent matter. Examples of this description it is easy to distinguish from the more simple affection of the cerebral envelopes.

Notwithstanding the foregoing sketch of anormal changes observed or alleged to be observed in the cerebral membranes of the insane, on various points the candid inquirer will deliberate before he is ready to grant assent to all the propositions and principles advanced in the volume now under consideration.

The first and most obvious point for inquiry is, whether the morbid changes already enumerated are the genuine causes of mental derangement,—whether they are constant in their presence and influence,—and if they be, by what means are we to explain the circumstance of their having so long escaped the observation of inquirers?

The first point can best be answered by reference to the cases of M. Bayle, all of which, doubtless, present various degrees of mental derangement. The author himself undertakes to distinguish these external effects into three stages, one of *monomania*, a second of *mania*, and a third of fatuity *(dementia.)* It is justly remarked, however, by M. Calmeil, that there is nothing fixed in this respect for all subjects. It is indeed well known that both monomania and mania terminate sooner or later in fatuity, unless the individual be cut off by some acute form of the disease, or some accidental cerebral disorder with which it is complicated. But it is by no means equally certain that monomania proceeds to mania, nor that the latter must be preceded by the former.

Be this as it may, however, in a large proportion of cases chronic meningitis gives rise to monomaniacal derangement, in which aspiring and haughty ideas perform a conspicuous part. The direction which the ambitious train of thought takes depends much upon the ordinary pursuits and professional duties. A merchant or trader fancies himself all at once possessed of the most boundless wealth, though surrounded by poverty and misfortune. An artisan fancies himself the most dexterous and ingenious of his craft. Others, who deviate from this tract, imagine themselves dignified by exalted titles and honours; that they are colonels, generals, barons, princes, or even emperors; and others, in whom it takes a different direction still, arrogate the possession of the most extraordinary natural talents, and the highest attainments in the literary and scientific professions.

In those insane on all points, or the maniacal, the character of the derangement is universal confusion of thought and reasoning. The most extravagant conceptions, the most absurd and chimerical proposals, mixed with ambitious and haughty ideas and aspirations, dogged obstinacy on certain points, and paroxysms of fury and vociferation on others, constitute the usual subjects of thought, if thought it can be called, and expression.

The third period, or rather the concluding period of both forms of insanity, is always distinguished by gradual weakening of the intellectual faculties, till they are completely obliterated. The circumstance, however, most generally characteristic of the supervention of this form of insanity, is palsy of some order of the voluntary muscles, proceeding successively to affect the greater part, till it terminates in general palsy and death. As this adjunct is one of great moment, both in relation to the pathological causes of the disorder and its probable termination, it merits more attention than it has hitherto received from those devoted to the study of mental disorders. To this, therefore, we shall afterwards return.

Admitting, therefore, what the researches of M. Bayle seem to establish, that the chronic meningeal inflammation described above is really connected with mental derangement, it remains to be inquired, whether it be a constant and invariable cause of the latter disorder, or whether derangement can exist without this or some analogous change in the cerebral organization. The determination of the former part of this question has been already in some measure anticipated by the observations made on the researches of Greding, Chiarugi, Haslam, and Marshall. So far as observation can determine a question by the collection of a number of facts tending to the same general results, it may be inferred, that, in a large proportion of cases of mental derangement, the capillary circulation of the membranes is much, sometimes very remarkably, disordered. Even in those instances in which the cerebral substance is affected, it appears to depend on previous meningeal disease, the morbid process of the filamentous-vascular system of the *pia mater* passing directly and easily to the gray matter of the convoluted surface, and occasionally to the white-gray matter of the central parts. When indeed it is remembered that the membranous envelope of the convoluted surface, and the vascular web of the central surface are simultaneously disordered, it is easy to see that the intermediate cerebral substance cannot be free from disease.

But if meningeal inflammation, when chronic, gives rise to confusion of thought and derangement of intellect, it may justly be inquired whether it does so when acute, and when taking place under ordinary circumstances. To determine this point it is requisite to ascertain in what states or diseases the circulation of the cerebral membranes is disordered. In continued fever, and in that form of ague which is attended with symptoms of disorder of the head (*tertiana phrenitica*, *siriasis Ægyptiaca*, *tertiana carotica*, &c.) the vessels of the *pia mater* are inordinately, sometimes very much overloaded. In the cerebral disorder which terminates in water of the brain (*hydrencephalus*), they are also inordinately loaded and injected ; and in both of these disorders we know that memory is impaired, thought is confused, and judgment more or less subverted. In the latter case, indeed, the point can only be determined in the case of adults, or at least of persons above childhood ; and in more than one case of hydrencephalus occurring in persons of this description we may assert, from personal experience, that not only are the external senses disordered, but the recollection is indistinct, thought is confused, and the train of ideas is incongruous.

A proof still less equivocal may be derived from a variety of meningeal inflammation already alluded to in the course of these remarks,—that succeeding to violence inflicted on the head, *(phrenitis traumatica.)* From the cases given in the writings of Pott, Dease, Hill, and especially of Schmucker, and other army surgeons, no doubt can be entertained of the influence of this injury in producing inflammation of the cerebral membranes,—injection of the *pia mater* and choroid plexus,—and its legitimate products, serous infiltration and effusion of serous fluid into the ventricles. During the continuance of this state there can be no question that the intellectual faculties are much deranged, and that the derangement is intimately connected with the meningeal or meningo-encephalic disorder. It can be of little moment in this case to argue that the one disease is attended with febrile commotion in the sanguiferous system, while the other is without. The two conditions of the system agree in the essential circumstance, that the anatomical state of the cerebral membranes is the same.

The circumstance now mentioned is further important in affording the best explanation of the influence of certain exciting causes in the production of insanity. It has been long observed that insolation, the *coup de soleil* of hot climates, and injuries of the head, if not soon or immediately fatal, often terminate in some form of mental derangement. Of the general truth of the fact that *coup de soleil,* when not fatal, is followed by mental derangement more or less complete, and more or less lasting, no doubt can be entertained; for cases of this description are daily falling under the observation of the practitioner; and for the influence of injury of the head most of our institutions for the reception of the insane, and military and naval hospitals in general, but especially that of Chatham in particular, furnish abundant and decisive testimony. Though in ordinary medical language these are stated as causes of insanity, this vague and confused mode of expression is employed only in accordance with the superficial observation with which cause and effect are often connected in medical reasoning. They are causes of meningeal and meningo-encephalic inflammation, which is the pathological state giving rise to the deranged intellect. These causes, it is well known, are adequate to induce a change always in the organization of the cerebral membranes, sometimes in the brain itself; and in proportion as this change is trifling or considerable, the derangement is also variable in degree. If it subside spontaneously, or is controlled by judicious measures, the derangement also recedes; but if the morbid process of the membranes is either aggravated or remains the same, the maniacal or monomaniacal state becomes more intense and inveterate, till it eventually terminates in confirmed fatuity.

Similar considerations may be justly applied to other agents referred to the order of exciting causes, and to none more readily than the habitual and intemperate use of intoxicating liquors. However the fact is to be explained physiologically, no doubt can be entertained of the influence which these substances possess in inducing accumulation within the vessels of the brain and its membranes. This is demonstrated both by their temporary administration and by their habitual employment,—a frequent effect of which is to induce manifest congestion of the meningeal vessels. *

It must not, nevertheless, be imagined that the traces of this meningeal disorder are always very distinct. The injection alone is essential; the effusion and infiltration, the opacity and thickening of the membranes, which are mere effects, may or may not be present, according to the duration of the disease. In recent cases it may be so slight as to escape notice. In those of more lengthened duration, it may have subsided and given place to its effects. These considerations must be kept in view in the inquiry into the influence of any anormal state of the meningeal vessels in producing mental derangement.

Upon the question whether derangement could take place with a perfectly normal state of the cerebral membranes, it is not difficult to come to a conclusion. Amidst so much positive evidence, one or two, or even several cases, in which they seemed to be sound and in their normal condition, would scarcely be adequate to prove the negative. The reason of this must be obvious to any one familiar with the rules of evidence in medical inquiries. In pathological researches it is by no means an easy task at all times to fix the standard of healthy or normal organization; and the vague language in which necroscopic reports are too often expressed, leaves a wide chasm for many fallacies. What may be healthy in relation to the tissues of one subject may be morbid in reference to those of another; and a very inconsiderable deviation from the healthy standard may produce in different individuals different effects. Even in cases in which no morbid deviation is stated to have been recognized, it is not improbable that this has arisen from the circumstance, that the exact limits of sound and morbid organization were not

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* See dissections of cases of *delirium tremens* in the writings of Frank, Speranza, Black, and others.

exactly defined. It is not, as has been formerly hinted, always necessary to look for *change of structure*, or, in other words, for the *products of morbid action.* The morbid process itself, which consists in *change of organization* only, that is, some deviation in the circulating system, is, in all cases, sufficient to induce change of function. To this, therefore, the pathologist must direct all his attention in studying to fix the characters of anormal action. These considerations show how easy it is for slight degrees of change to escape notice, and how necessary it is for physicians in subsequent researches to examine, with the closest scrutiny, the state of the cerebral membranes in those who have lived and died insane.

The subject of remote causes, and more especially the manner in which they are connected with the proximate or pathological cause, constitutes an important but arduous inquiry ; and all that can be attempted here shall be confined to a few brief remarks.

Under the head of *sex*, it appears that among 182 patients at Charenton 158 were men and only twenty-four were females,—a difference which M. Bayle ascribes to the influence of great moral commotions, excess in drinking, wounds of the head, &c. to which the one sex is much more exposed than the other. Though all ages are subject to chronic meningeal inflammation, yet, according to the tables in the present volume, it is most frequent between the ages of 35 and 45, the numbers being greatest between these periods, (one-third of the whole ;) less so from 45 to 50, nearly of the same degree of frequency between 30 and 35, and 50 and 60, after which it appears to become much less frequent. From this view M. Bayle infers that insanity is a disease of the tempestuous season of life, when hope is still unbroken, when passions are strong, and when pleasure, luxury, ambition, and avarice alternately take possession of the heart.

Under the head of *profession*, it is a circumstance deserving attention, that the military life has furnished a large proportion of the residents of Charenton. Among 134 persons who had been trained to the various occupations pursued by the male sex, forty-eight belonged to the military profession, twenty-five had been occupied in offices of the public administration, twenty-five had been engaged in commerce, eighteen in different trades, eight in the fine arts, and only six in offices connected with the profession of the law. It would have thrown some light on the nature of this disease if as much of the history of each of these cases had been furnished as to show, whether the military life possesses, beyond exposure to accidental injuries and intemperate or irregular habits, anything capable of favouring the formation of the disorder. It appears that ten cases only were traced directly to the fatigues of the military life, and the same number to blows, falls, or wounds on the head; but it is not said whether the latter occurred among the military or the civil maniacs. A similar defect may be noticed in the head of *excess in drinking*, to which thirty-one cases are ascribed, but without stating whether they occurred in the persons of the military or the civil. A mode rather peculiar of explaining the prevalence of insanity among the former is to ascribe it to the sudden transition from a state of warfare and tumult to that of peace and tranquillity. Though the former is doubtless a condition of fatigue, privation, and penury, and the latter may be, as M. Bayle supposes, one of abundance, yet it is well known that war is equally often the season of indulgence, excess, and irregularity; while peace, if one *d'une nourriture abondante*, is also a season of idleness, inactivity, and ennui, prolific causes of mental aberration. It is unfortunate that the author gives equally few data to trace the connection between the remote and proximate causes in this case.

Under the head of *pathological predisposing causes*, however, the reader finds more distinct matter for reflection. In eighteen cases the disease supervened on suppressing habitual hemorrhoidal discharge, in two the interruption of a habitual blood-letting, in four the suppression of cutaneous eruptions, in seven cases chronic rheumatism, and in three frequent attacks of gout and erysipelas. In fifteen cases the disease was connected with hypertrophy of the left ventricle, in eight with headach of longer or shorter duration, and in three with nervous attacks. In such circumstances, little doubt can be entertained of the connection between the apparent exciting cause and the morbid state of the brain or its membranes, or both.

Of moral causes, the most frequent are the gloomy passions, as disappointment, envy, vexation, or disgust. Thus the military adventurer, whose ambitious hopes of riches and elevated rank were dashed by the concluding events of the war, become the victim of a deep and settled gloom, which eventually, by fixing on the brain, unhinged his reason. Those engaged in mercantile pursuits suffered from unsuccessful speculations, from failures and the contingent losses. And many, it appears, by losing situations, on which the hopes of their families depended, became dejected and desponding, till, by frequent brooding over their calamities, their faculties became disordered, and their reason impaired.

All these remote causes concur, according to M. Bayle, in producing in the cerebral membranes an irritation, of which the prominent feature is congestion or accumulation of blood in the capillaries; " une fluxion sanguine vers la tete, dans les vaisseaux du cerveau, mais surtout de la pie-mere." This congestion he represents as existing in all cases, and as invariably preceding the attack of chronic inflammation of the meninges, of which it is to be considered, he says, as the proximate or direct cause.. In this stage it gave rise to pain or weight of the head, and more or less disorder of the sensations. In one-half nearly of the cases the rapidity and violence of the attack gave rise to a distinct apoplectic fit, varying in duration from a few minutes to several hours; and in the course of a few days or weeks after, mental derangement became manifest. In the other half of the cases the approach of the insane symptoms was different. In some instances habitual somnolence, weight of the head, and redness of the face and eyes, were the first symptoms of the congestive stage; in others giddiness, loss of recollection, and transitory confusion of thought, occasionally with indistinct or thick articulation, were its effects; and in others again, stammering or incapacity to articulate certain words, with inability to walk in a straight line, or maintain the equilibrium, were the indications of its commencement.

Of the mode in which the remote causes operate in producing this irritative congestion, M. Bayle nowhere gives any information; and the reader is left to take his authority for it, without being instructed why the remote causes should produce the effect alleged. That some of them, as mechanical violence, habitual intoxication, and *coup de soleil*, should give rise to such disorder of the meningeal capillaries, is not difficult to see. But it is much more difficult to understand how a moral affection should induce this material change in the animal tissues; and of no moral affection is it more difficult to understand this, than of those which are said to give rise to religious monomania. Without wishing to impair the veracity or authenticity of the descriptions of M. Bayle, we are inclined to think that what is believed to be a cause is very often the first overt effect of insanity.

A man, for example, of most sanguine and ambitious hopes, forms some absurd and chimerical design, which no person of sober thought or chastened judgment would indulge for a moment. If he succeeds either partially or generally, he is one of the few who succeed in such undertakings. But if he fail, which is the most likely result, the disappointment of his hopes is so great, that, instead of attempting to repair his error as a well regulated mind would do, he broods over what he conceives to be his misfortune, or he allows himself to be worked into a fit of peevishness and discontent, till he commits some extravagant act which no longer permits his derangement to be questioned. In such a case as this, however, which is by no means uncommon, disappointment is not the cause of insanity. The individual was previously insane, and committed his first mistake under the monomaniacal delusion; but it was only when he committed the overt act that it attracted notice. The course now mentioned is very much the case with what is termed *religious* insanity. The victims of this variety of *monomania* are in general ignorant and weak to an extreme; incapable of any exercise of their own reason, of which indeed they have but a small share; credulous, and ready to become the prey of any unprincipled person a little more shrewd than themselves. They are, in short, originally persons of weak intellects; and this weakness depends in all probability on original or hereditary conformation. Of such insanity religion cannot be said to be the cause. But the original susceptibility, or what Mr Hunter would have termed the *disposition* to meningeal disease already existing, leads them to think, and of course to think very erroneously, on a topic in which all are much interested. Reason and judgment, in such circumstances, have no share in the business. Imagination, unrestrained and extravagant, is the sole agent. The longer they think on a subject much too difficult for the small portion of reason which they possess, the more confused they become; and when to this are added the terrors which injudicious advisers too often neglect not to strike into their disordered breasts, the result is not wonderful. In this case, however, insanity also pre-exists, and, in truth, is the cause of the erroneous train of thinking. In such individuals the disposition to the unsound state of the cerebral membranes forms part of the original structure. Passions, emotions, and other moral circumstances, in all such cases, though apparently causes, are really effects; for in a mind originally sound no such inordinate emotions are allowed to exist or operate.

The last subject to which we shall advert in these observations is one of much moment in settling the question regarding the material cause of mental derangement. The combination to a greater or less extent with palsy, a disorder always, so far as is hitherto known, dependent on some material change in the brain or its membranes, cannot fail to afford a strong proof of the material nature of the former disease.

The connection between palsy and insanity, though rather overlooked by authors, has nevertheless been observed. But the fact of the connection, though established, has not been properly or diligently applied. " Paralytic affections," says Haslam, " are a much more frequent cause of insanity than has been commonly supposed; and they are also a very common effect of madness. More maniacs die of hemiplegia and apoplexy than from any other disease."* Here is stated a fact of the utmost importance, but so mystified, we regret to say, that its proper application is wholly overlooked. Paralytic affections cannot be said to be a cause of insanity any more than insanity can be said to be a cause of palsy. The explanation may be understood from the concluding statement, that " more maniacs die," not so much of " apoplexy and palsy," as of that state of the brain which induces at once mental derangement, loss of power, and finally loss of sensation, than of any other morbid state. By looking solely to the pathological cause of disease, much confusion both of thought and expression is prevented.

In all the institutions for the reception of the insane we find a number more or less considerable of persons who labour under various disorders of the muscles of voluntary motion. Some speak thick, articulate with difficulty, or actually stammer in attempting to express their thoughts ; some totter or stagger as they walk, or require some support; others have involuntary contractions in an arm or leg; others have convulsive or tonic spasms; several are hemiplegic or paraplegic ; and not a few, after passing through one or more of these forms of impaired motion, are entirely deprived of the use of their extremities. All these varieties of impaired motion have been collected under the general name of palsy,—an epithet improper certainly, both nosologically and pathologically, but which perhaps it would be inconvenient to reject entirely.

It is not easy to say whether this palsy should be regarded as invariably or only accidentally connected with mental derangement. By M. Bayle, who believes it to be necessarily connected, it is represented as one of the usual symptoms of the last stage of chronic meningeal inflammation,—as the point to which, along with fatuity or *dementia*, mania necessarily tends. M. Calmeil, on the contrary, who denies indeed several of the doctrines of M. Bayle, for whom he seems to have no great respect, says that this representation is quite hypothetical, and states it to be the result of many notes intentionally taken on the subject, that palsy commences sometimes after mental derangement, sometimes at the same period, and that rarely it precedes that disorder.

1*st*, In some instances mental derangement proceeds to the chronic state, and continues from 15 to 20 years without the patients betraying the smallest degree of feebleness in their lower extremities, or the slightest embarrassment in speech. The same individuals, nevertheless, may present at a later period all the signs of general palsy. Intelligence appears to be entirely obliterated; speech is unintelligible; progression becomes unsteady; and as these symptoms are aggravated, the moment of death, which previously appeared to be distant, approaches with rapid strides. This statement, though given by M. Calmeil, doubtless corresponds with the view given by M. Bayle. At Charenton, it appears, palsy takes place shortly after mental derangement.

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* Observations on Madness and Melancholy, &c. Chapter vi. p. 259. Second edition. London, 1809.

2d, In other instances palsy comes on simultaneously with the mental disorder. It appears that at Charenton there are daily admitted patients who exhibit much disorder of locomotion, which is not stated in the certificate of the physician to whose care the patient was first committed. Upon examination it often results that the speech was thick, or the motion of the limbs irregular, as soon as the first symptoms of deranged intellect appeared.

3d, Though more difficult to find cases in which paralytic disorder preceded the mental, this nevertheless has been observed. Under the care of M. Esquirol, was a patient struck with general palsy, who for several months retained all the vigour of intelligence, and still continued to perform an important part in business. Eventually, however, he became maniacal.

Palsy in the insane is distinguished by peculiar characters. At first the motions of the tongue are constrained; the efforts to speak are unavailing; articulation is impossible; and the individual struggles and stammers like a person intoxicated to express his desires. As this becomes more intense, he is observed to totter, stagger, or reel in walking, and is aware that he cannot direct the muscles of his limbs to move as he wills them. The derangement at this time is generally verging rapidly to fatuity. At a more advanced period, not only is speech obliterated or converted into inarticulate muttering, but the patient is unable to maintain himself erect, and whenever he wills to make any motion, he finds that neither arms nor legs are obedient to his desires. It impairs, in short, but does not annihilate, the motions of *all* the voluntary muscles. It is a *general* but *incomplete* loss of power.

With the palsy is generally associated more or less affection of the senses, which, however, are not obliterated. The paralytic madman distinguishes light from darkness, he hears a loud sound made at his ears, and he is sensible of pungent odours. But if the skin be touched with two bodies, the one hot and the other cold, he does not distinguish the difference. General sensation and taste are equally obtuse. In this state death is generally not remote. The duration of the affection varies according to the slowness or rapidity of the disorder in the brain, on which the palsy depends. Some paralytic maniacs live eight months, a-year, eighteen months, and others even continue two or three years, but rarely more. The average duration of life after the commencement of paralytic symptoms is about thirteen months.

The fatal termination, however, is not always inevitable. M. Calmeil mentions examples of paralytic maniacs, who, after manifesting the usual signs of a disease known to be certainly fatal, have unexpectedly recovered a degree of strength, and been able to walk several hours daily. These alternations depend apparently on the cerebral affection stopping after it reaches a certain point.

The comparative frequency of palsy in the insane is a point of great moment in the determination of the question of the anatomical characters of insanity. The pathologist is naturally led to the question, whether palsy occurs in all the insane as a necessary concomitant or effect of the morbid process, which is supposed to give rise to mental derangement, or is confined only to a certain description of cases. On these points we find no certain elements in the writings of the present authors. M. Bayle, though he admits that the third stage, or that of fatuity (*dementia*), is not always the consequence of the second (*mania*), and may follow immediately the monomaniacal stage, (p. 504,) represents palsy more or less complete to be an invariable adjunct of the stage of *dementia*. According to this author, every case of insanity, that is, every case of chronic meningeal inflammation, if it does not sooner, and in a more acute manner extinguish life, terminates naturally in palsy more or less complete of all the voluntary muscles, and eventually affects those subservient to involuntary motion. The duration of the entire disease then varies from two months to six, eight, ten, or even twelve years; while that of the fatuous paralytic period varies from three, six, or eight months, to that of two or three years; a statement not materially different from that of M. Calmeil.

The latter author, on the other hand, satisfies himself with saying simply, in general terms, that palsies are *very frequent* in the insane. He remarks, however, that, since *general incomplete* palsy is rather rare in females, there ought to be fewer in an equal number of subjects in the wards of the Salpetrière, inhabited exclusively by women, than of those of Charenton, in which patients of both sexes are confined. In Bicétre, on the contrary, which is devoted to men only, general palsy, he remarks, ought to be a very frequent disorder; and the total amount of cases ought to be much greater than in the other two establishments. These, however, are conjectural results; and we do not perceive that either author has been at the pains to verify them. We are therefore left somewhat in the dark as to the main point of inquiry, whether insanity with palsy is really a different disease, or merely an advanced stage of the same disease, as insanity without palsy.

In the heads of persons cut off by this disease a great variety of morbid changes is found. In some the cranial bones are affected; in many the membranes are diseased or changed in structure; in not a few the cerebral substance is the seat of various morbid changes; and in some new growths or formations are developed. After an elaborate and careful examination of these changes, of the circumstances with which they are connected, and of their comparative influence, M. Calmeil comes to the conclusion, that, as none of them are constant, none are essential; and that to explain the phenomena of the disease, it is necessary to look for some morbid state, which, as a common point of agreement among all, may be present in all cases, and therefore adequate to explain the phenomena of all. This, he imagines, is found in a chronic inflammatory process, which exercises its principal ravages at the surface of the convolutions, in the gray matter, and in the membranous coverings of the organ. This chronic inflammation, he conceives, gives rise to palsy, by inducing in the brain a change of organization *identical* or common to the whole of the cases examined necroscopically, and which must have existed independently of the lesions recognized. He justly remarks, that the circumstance of the brain of a person cut off by general palsy presenting no appreciable trace of such inflammation would not be positive proof that it did not exist; since after continuing for some time it might have subsided, leaving a morbid change, which, though not a direct cause of the paralytic disorder, was an effect of the cause from which that resulted.

Although M. Calmeil disclaims all accordance with the principles of M. Bayle, the views now stated as issuing from the former are much less different from the doctrines maintained by the latter than at first sight appears. It is of little moment whether insanity be ascribed to a phlegmasia of the cerebral membranes or of the convoluted surface. The difference is more in name than in reality. It is also of little moment whether it be the fact, that insanity passes through the three progressive stages of *monomania*, *mania*, and *dementia*. It is certain that *dementia* is generally preceded by simple deranged intellect; it is almost certain that both depend on material morbid conditions of the brain or of its membranes; and it is quite certain that when combined with palsy, insanity always depends upon some morbid state of the brain, or of its membranes, or of both, which tends, with variable degrees of rapidity, to the extinction of life.

On one more topic a few words in the way of cumulative evidence may be added. The connection between mental derangement and convulsive motions of the voluntary muscles has been long and repeatedly remarked; nor has the transition of epilepsy into mania and fatuity escaped notice. Little doubt can be entertained that epilepsy, if long continued, is connected with material disorder in the organization of the brain; and if any one be sceptical as to the pathological origin of that disease when combined with mania or fatuity, the dissections of Greding, already so often quoted, may suffice to convince him. It is pleasing to find this connection illustrated by the researches of M. Bayle, who found convulsive phenomena of various forms and degrees in one-fourth of his cases. These phenomena consist of spasmodic agitation, continued or periodical; tremulous motions of the muscles; involuntary grinding and gnashing of the teeth; convulsions of several members, or of the whole person; involuntary rigid contractions of the muscles of the extremities; local or general tetanic motions; and convulsive, epileptiform, or distinct epileptic attacks. These irregularities in the muscles of voluntary motion take place during the course of the first and second periods of the disease, and may be continued to the third. In other instances they appear in the third only; but in both cases they continue till the fatal termination.

The facts now stated, when properly understood, afford the explanation of the assertion often advanced in practical works, that epilepsy is one of the causes of insanity. To this erroneous representation the same remarks which were already mentioned in reference to palsy are applicable. Epilepsy and insanity are merely connate effects, simultaneous symptoms of the same morbid change going on in the brain or its membranes; and as both are the result of the same common cause, neither can be justly said to be the cause of the other. This inference, we conceive, will derive stronger confirmation from every case which is necroscopically examined with the necessary attention.

The views now delivered suggest important hints for the treatment of mental disorders. Upon this part of the subject, however, it is impossible at present to enter. For this, therefore, as for several other topics, we must refer our readers to the works themselves. It is not meant to represent these works as affording perfect or satisfactory explanations of all the complex and discordant circumstances in the pathology of insanity. They, however, contain a large proportion of valuable information, from which future observers may derive the utmost advantage in their researches on this disease. In this respect they well deserve the sedulous examination of those who would understand the nature of the several forms of mental derangement.

ART. II.—*Reports of Medical Cases, selected with a view of illustrating the Symptoms and Cure of Diseases by a reference to Morbid Anatomy.* By RICHARD BRIGHT, M. D. &c.—(*Continued from p.* 116.)

ALTHOUGH Dr Bright's illustrations of the pathology and treatment of Dropsy, which have been brought under the view of the reader in the last number of this Journal, form certainly the most interesting and novel part of his Reports,—nevertheless, the remaining part of the work, which is occupied with subjects that have been more carefully studied by prior inquirers, will, we have no doubt, be perused with care and approbation by every professional man who has been watching the late attempts made in this country and on the Continent to improve the pathology of pulmonary and febrile diseases. Next to the discovery and announcement of new facts in the science of practical medicine, the most important object of such publications as that now before us is the subjecting to the test of unbiassed observation the popular improvements or controverted doctrines of the day. This task has been undertaken with spirit and success by Dr Bright in his anatomical inquiries on the pathology of bronchitis, gangrene of the lungs, pulmonary consumption, and continued fever. The inspections are complete; the narrative evidently faithful and accurate; his descriptions clear, precise, and elegant; and the results pointedly illustrate and confirm all the most important particulars of the newer doctrines which are now rapidly gaining ground regarding the pathology of these diseases.

Under the head of pulmonary diseases, the first which the author has illustrated is Bronchitis, or inflammation of the mucous membrane of the lungs. His inquiries on this disease are chiefly confined to proving, by reference to five cases, of which four were examined after death, that, although the different textures of the lungs are so closely connected together as to be generally involved sooner or later in inflammation, which has originally affected but one of them, the inflammation may nevertheless be sometimes confined to one from first to last. This fact is so familiar to the pathologist as hardly to require farther illustration. It is very well exemplified by Dr Bright in his cases of bronchitis,—a disease in which inflammation of a single texture is perhaps more frequently witnessed than in any other inflammatory affection of the lungs. Case 44 is peculiarly interesting. Besides establishing what is now mentioned, it shows the tendency of this disease to pervade at one time the whole extent of the mucous membrane of the air-passages, from the epiglottis to the minute air-cells; and it also shows very clearly the injurious effects of blood-letting in the advanced stage of the disease, even when the state of the pulse would seem to render such practice necessary.

The two next cases are examples of inflammation of the cellullar texture of the lungs, ending in true suppuration,—of pulmonic suppuration, occurring independently of the previous deposition of tubercular matter. They do not appear in any respect very remarkable.

Next follows a much more interesting section, containing six cases of gangrene of the lungs. Under this head he shows that pneumonia may terminate in gangrene without any characteristic symptom, and in particular that fetor of the breath may be wanting, apparently in consequence of the part which has been killed being occasionally separated from the rest of the organ, and cut off from its communications with the air-tubes by a healthy inflammatory process, forming something like a boundary line of consolidated pulmonary tissue. Among his cases Dr Bright has given instances of gangrene of a whole lung,—of gangrene in various small detached portions,—of gangrene surrounding a hepatized mass of lung or a tubercle, so as to insulate and loosen it,—of gangrene intimately blended with diffuse suppuration, so as to form a mass like an anthrax or carbuncle. His descriptions of these appearances are clear and distinct, and the engravings which accompany the cases are intelligible,—a quality which it is exceedingly difficult to impart, and which very few engravings of the morbid states of the lungs possess.

The next section of the work includes nine very characteristic cases illustrating the pathology of pulmonary consumption This subject has been investigated so fully in the analyses given in this Journal of the anatomical researches of MM. Laennec, Andral, Louis, Lombard, and Drs Baron and Alison, that there remains little new for us to extract from the Reports of Dr Bright. His cases illustrate the several stages and varieties of tubercles in the lungs, with their occasional concomitants, ulceration of the larynx, suppuration and chalky concretion of the bronchial glands, inflammation and ulceration of the intestines, enlargement and suppuration of the mesenteric glands. The cases are admirably described, and in all their parts complete. Dr Bright adopts the doctrine that tubercles frequently soften from their centre, in opposition to the opinions lately maintained by Andral and Lombard. These authors think that the matter of tubercles is always loosened and detached by inflammation and suppuration of the pulmonary tissue around them, and that the appearance of softening from within is fallacious, and arises from the pulmonary tissue, which is interwoven with and condensed by disseminated tubercular matter, passing into a state of suppuration, and so breaking down the compound tubercle. There is no doubt that this is often a very correct account of the progress of tubercles; but we have no difficulty in agreeing with Dr Bright, and holding the old view of their progress to be often correct likewise. Dr Bright's cases show that it is conformable with frequent observation; and we have ourselves repeatedly witnessed proofs of its accuracy. The author's account of the progress of ulceration in the intestines during phthisis, and his illustrations of the frequent connection subsisting between these ulcers and enlargement of the glands on the corresponding part of the mesentery, are deserving of particular attention. His statements are of course not new; but the leading facts are unfolded with great clearness and precision. He directs the regard of the practitioner to this accessary affection as one which causes more annoyance to the sufferer than almost any other part of his disease, and represents it as more manageable than most medical men have found it. In several instances he appears to have succeeded in checking the progress of intestinal ulceration. His favourite remedy is ipecacuan, in the dose of one or two grains thrice a-day.

To this section succeed a few paragraphs on *A Morbid Condition of the Coats of the Arteries.* This is neither more nor less than excessive redness of the internal coat of the great arteries, and sometimes of their ramifications also. In one instance this appearance pervaded the whole arteries of the body, but affected particularly the femoral artery of a recently amputated stump, which had become sloughy; in another it was observed after phthisis; and in a third after death from diseased liver and gorged lungs. Dr Bright's attention was called to this appearance in the second and third cases in consequence of both of the patients having complained of *excessive tenderness of the whole integuments*, a symptom which he had observed many years before in the first case in connection with the same state of the arterial coats. He admits, however, that the colour was derived " apparently from the stain of the blood," while he maintains at the same time that it might arise " possibly from vascular injection." As the author has unaccountably omitted to mention the state of the blood in the cases he examined, it is impossible to settle the question here propounded. But we may remind him that the redness alluded to is very commonly seen when the blood remains fluid after death, and is in reality almost always a pseudo-morbid appearance, the result of dyeing of the coats. *

Next to the section upon dropsy, by far the most valuable part of the reports is that which treats of Inflammation and Ulceration of the Intestines as occurring in the course of Continued Fever. The writings of various French authors have for some time past turned the attention of pathologists and practical men to this subject; and on the Continent the occurrence of intestinal inflammation during fever has been allowed fully more than its due influence on medical doctrines and practice. In our own country it is certainly a much less frequent concomitant of general fever; † but we are nevertheless quite prepared to admit that it is both more common, and a source of greater danger, as well as a more essential object of treatment, than is supposed by many British physicians. On these accounts the observations and cases of Dr Bright appear to us to have been brought seasonably before the public; and the views and general results at which he has arrived, although their chief merit is, that they confirm and illustrate the observations made by previous inquirers, and have little claim to novelty or originality, will we have no doubt prove exceedingly useful.

In the form of continued fever which has occurred among the patients of Guy's Hospital under Dr Bright's care, inflammatory affections of the intestines seem to have been exceeding frequent. The fever itself is described as mild, or at least not requiring or giving scope for active measures in the way of treatment,—a description which appears to apply to this disease as it occurs throughout London generally. The intestinal affection which forms the subject of Dr Bright's inquiries is represented by him as showing itself early in the course of the fever,—sometimes in a few days, frequently within the first week,—and few escape it altogether.

The parts of the intestinal canal which are chiefly disordered are the lower portion of the ilium, the cœcum, the commencement of the colon, sometimes the duodenum is also affected, and occasionally the whole tract of the intestines great and small. The inflammation is for some time confined nearly or entirely to their mucous membrane. Local or general vascularity is in some instances the only sign in the dead body of this membrane having been inflamed. More generally, however, the vascularity is connected with enlargement of the mucous glands, which in the

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* See the review of MM. Rigot and Trousseau on pseudo-morbid appearances in this Journal, xxviii. 151.

† See Dr Alison's paper on the Epidemic Fever of last year contained in this Journal, xxviii. 258.

early stage of their progress are elevated, transparent, and covered with fine vessels, in the more advanced become distended with a yellow cheesy matter, and finally slough off or ulcerate on their surface.

"The same process, or nearly so, takes place both in the solitary and in the congregate glands, except that in the latter the appearance becomes much more formidable, and the mischief more extensive. The masses or clusters of congregate glands are chiefly placed along that part of the intestine which is farthest from the insertion of the mesentery; and when the parts are irritated from disease, three, four, or five considerable branches of vessels are seen passing on the mucous membrane, from the mesentery on each side, towards the cluster of congregate glands. These divide and subdivide before they reach the glands; and, running in fact over the surface of the cluster till their distribution is lost to the eye, enter apparently into the thickened mass of glandular structure beneath. The glands themselves seem first to enlarge, becoming distinctly visible to the eye, and after some time form a thick flat mass of a lighter colour than the surrounding intestine. This sometimes increases to the thickness of a half-crown piece, and occasionally even spreads on the top, so that the surface overhangs the base nearly the sixth part of an inch. Sometimes a dark-coloured mass like grumous blood is deposited amongst the glands; so that the whole mass, instead of being lighter than the intestine, is of a brown colour, elevated evenly above the surface; but in either case the mucous membrane is at first only raised, and not broken. In a little time fissures are formed with ulceration on the mass, and when more or less deep occupy the surface of the whole. Where the irritation is little, the ulceration is often mild and merely superficial; but when any thing has occurred to irritate the ulcer, it becomes deep and ragged, with an uneven bottom, caused apparently by the projecting remnants of the enlarged glands, or it is filled by a dense slough stained of a yellow colour by the bile and fœces. As the inflammation subsides, the depth of the ulcer diminishes; and the greater part of the glandular structure being apparently removed by ulceration and sloughing, the edges fall down, and the ulcer becomes shallow, sometimes leaving the muscular fibres nicely displayed, or often exposing the internal surface of the peritonæum for the space of a quarter or half an inch square. This excavation is filled by a process of granulation, which may be seen very beautifully by suspending the intestine cut open before a lamp or bright sunshine, and examining it with a common lens; the granulations are then seen sometimes arising in broken lines in the direction of the muscular fibres, at other times arranged in radiated lines around a central point; and when the whole is healed, a scar remains visible for some time, not unlike a superficial scar from small-pox, and generally interspersed with slight elevations of a grayish colour. This scar appears to be covered with a true mucous membrane, the surface being quite continuous with the membrane lining the rest of the canal; indeed, on inspecting the ulcer in the process of healing, we perceive the vessels of the mucous membrane running over the surface to be repaired. The whole process of the ulceration and healing is quite analogous to those painful and irritating sores which frequently take place within the lips, or on the mucous membrane lining the cheeks, where obstruction in the follicles, enlargement, ulceration, sloughing, and perfect repair, are all most distinctly and easily traced."—

"The peritonæal covering at the back of the ulcers is generally discoloured and vascular, but seldom appears actually inflamed. . . . Occasionally, however, the mischief is not confined to the mucous or even the muscular covering, but the peritonæum also becomes decidedly inflamed; in which case after death a sero-purulent effusion is found, and shreds of coagulable matter glue the convolutions together. In a few rare cases the ulceration finds its way through the peritonæum, and a portion of the contents of the intestine actually passes into the cavity of the abdomen, when general inflammation is excited, and death follows.

"With these appearances of the intestines, we usually find some considerable derangement in the structure of the mesenteric glands. They are almost always enlarged and vascular, often exceeding the size of a pigeon's egg, and appearing quite covered with turgid vessels. They are in general most affected immediately opposite to the ulcers of the intestines, and occasionally go into a state of complete suppuration, so that I have seen them apparently on the point of discharging themselves through the peritonæum into the cavity of the abdomen. But I believe that not unfrequently the pus is absorbed, and quietly subsides."—p. 188.

This admirable description, which is here quoted in detail, partly on account of the clear idea it gives of the affection it is intended to represent, and partly that it may serve as a specimen of our author's mode of handling the anatomical department of his subject, accords very exactly with the descriptions of Serres, Petit, Louis, and Billard.

In noticing the symptoms by which intestinal inflammation and ulceration may be recognized when they occur during fever, Dr Bright waives the question, whether the fever is essential, or depends on such local inflammations, evidently, however, leaning to the old opinion, that the local disorder is merely a superadded affection, and passes at once to describe its external signs. During the early stage of the fever, the symptoms are often the same as in fevers not accompanied with intestinal inflammation; and in particular the bowels are often costive. The first symptom Dr Bright seems to consider to be diarrhœa, which sometimes exists from the beginning, but more commonly does not make its appearance for nearly a week. The stools are seldom very frequent, five, six, or eight in the course of twenty-four hours. They consist at first of feculent matter, probably dark and fetid, from long accumulation in the gut; but afterwards they become thin, watery, and have exactly the appearance as if ochre was diffused through them. These ochrey stools Dr Bright believes always to indicate approaching or commencing ulceration. Pain of abdomen on pressure, tormina even before the stools, or tenesmus, are by no means essential symptoms; and tenderness of the abdomen, if considerable, denotes that the peritonæum participates in the inflammation. Vomiting with or without tenderness of the epigastrium is considered to indicate a tendency to inflammation in the duodenum. The progress of the ochrey stools, their increasing or decreasing frequency, quantity, or thinness, indicates very exactly the progress of the ulceration.

When the intestinal inflammation, as thus indicated, has gone on for a day or more, it becomes accompanied with a sympathetic disorder of the head, marked at first by slight stupor and delirium, afterwards by deeper stupor, vacant expression, flushed face, higher delirium, and eventually by pure and fatal coma, if the disease is not previously checked. The fever may be also accompanied by a cerebral affection, which is independent of the disorder of the intestines, and precedes it several days; but our author says he has had no difficulty in tracing in such cases the supervention of the secondary or symptomatic disorder of the brain, and in observing it progressively increasing or decreasing with the gradual increase or decrease of the intestinal ulceration.

As to the accuracy of these views of the diagnostic signs of intestinal inflammation, we may repeat what has been stated not long ago by Dr Alison, in his excellent account of the epidemic fever, which prevailed last year in this city, and which has continued more or less ever since, that inflammatory affections of the intestines, and more particularly ulceration, as established by pathological inspections, are rare events in the continued fever of Edinburgh, and it must therefore be allowed that we are not perhaps qualified to give an opinion upon the present subject. But nevertheless we cannot help expressing our conviction, that Dr Bright has overrated the necessity of the connection of the frequent, thin, ochrey evacuations in fever, with ulceration of the intestines. In the fever of Edinburgh, as it has prevailed for the last two years, and in former epidemics likewise which we have witnessed, ochrey diarrhœa, accompanied with low delirium, or rather with stupor and oppression, has been common enough, but has occurred so seldom in cases which proved fatal, that if Dr Bright's diagnostic be correct, we must suppose intestinal ulceration to be a much more manageable and unimportant disorder than in common with other practitioners we have been always led to believe. When such patients have died at an early period, we have never found intestinal ulceration in the dead body—nay, rarely even unequivocal inflammatory vascularity. And almost the only cases in which ulceration has been seen, were those in which the symptoms of general fever had long passed away, and in which death took place after an interval of many weeks, in consequence of protracted diarrhœa and slowly increasing exhaustion. It must be admitted that the occurrence of ochrey diarrhœa, more especially when united with tormina or tenderness, or both, as frequently happens in the fever of our hospitals, always indicates a tendency to intestinal inflammation, if not its actual existence. But in reference to the treatment, it is important, as we shall now proceed to show, that if possible a distinct line be drawn between incipient inflammation and its sequela, ulceration.

In regard to the treatment, Dr Bright is of opinion, that as the fever is seldom or never violent or strongly inflammatory at the beginning, general blood-letting is rarely required. In cases of enteritic fever, as in those unaccompanied with disorder in the intestinal canal, the onset of the fever is attended frequently with constipation, and indeed an accumulation of indurated fœces, the result of long continued constipation in the first week, is the common cause of inflammatory action supervening. This is to be prevented by the usual attention to the state of the bowels; but if, after the operation of laxatives and the discharge of the common feculent contents, the bowels continue to act frequently, and the discharges begin to assume a thin ochrey appearance, the author cautions us against the continuance of laxatives, particularly of the active kind,—admits indeed the propriety of castor oil and emollient injections, if the discharges are of a doubtful nature,—but discards aperients altogether when the ochrey colour and watery consistence are fully developed. In the last circumstances his chief reliance is on the speedy production of the mildest possible mercurialism, which he brings on by small doses of the *hydrargyrum cum creta*. In general this is combined also with small doses of ipecacuan, a grain or two grains three times a-day, given in a chalk mixture; and such a combination, he appears to think, will rarely fail, if the local affection is attacked in time.

When an increase of the evacuations, the supervention of tormina, or tenderness on pressure of the abdomen, affords reason for believing that the inflammation is becoming more active, and is passing to the peritonæal surface of the intestines, he allows fomentations, leeches, and even cupping; but he thinks therewithal, that practitioners are too apt to believe every painful affection of the abdomen during fever is connected with inflammation, and to treat it as such by the abstraction of blood, while the milder plan specified above is more effectual and less debilitating.

Saline remedies and antimonials he discards altogether, as tending to increase irritation.

The employment of tonic remedies he considers with justice to be a point of much delicacy. When ulceration is fairly established, and the surrounding inflammatory action is lessened or removed, it becomes both necessary and practicable to support the system by tonics, and so prevent fatal exhaustion. But so long as the vascular turgescence of the mucous membrane continues, and ulceration is not established, such a course is quite inadmissible. The following passage gives a judicious, and, as we have had occasion to observe, a practically correct view of the principles which should direct the physician in these circumstances.

> "Occasionally the decidedly remittent form which the fever has assumed, has completely removed every scruple, and led to the free exhibition of the sulphate of quina with admirable effect. At the same time there is more danger to be feared from the too early use of stimulants, as long as the system is still able without their aid to support the febrile prostration, than there is risk in abstaining from stimulants a little beyond the period when they might possibly begin to act well. In a general way the system seems capable of supporting itself for a few days under that great degree of prostration which is connected with advanced ulceration of the bowels; and although we cannot determine the exact state of the ulcers in these cases, yet we find that *the action of stimulant and tonic remedies is often more certainly beneficial after that state of prostration has existed for some time, than when such remedies are administered with a view of obviating or anticipating the first symptoms of collapse.* For when administered too soon, they frequently kindle the inflammatory action with redoubled violence; and then it is that the most appalling combination of debility and nervous excitement is seen for one or two days to precede death."—p. 186.

It is for these reasons that we have adverted so pointedly to the possibility of the author's diagnostic sign of ulceration being not always a true one. The ochrey diarrhœa which occurs during the continued fever of this place, we have in general found a very manageable affection. When not united with tenderness or griping, it has appeared to us that nothing farther is required in most cases than abstinence from treatment, particularly from laxatives; that when the tormina are frequent, or the tenderness considerable, they are carried off with the other complaints by a free venesection, if the pulse and date of the fever allow such a measure,—by leeching in the more advanced stage, and by blisters when the pulse is too soft and compressible to admit of farther loss of blood. We agree entirely with our author, that the idea of checking the diarrhœa by opiates or astringents is quite out of the question. We have seen acute peritonæal inflammation induced by a deviation from that rule; and, on the other hand, it has often appeared to us that a mild ochrey diarrhœa, provided it is not accompanied by pain, has kept down the general fever, nay even the cerebral oppression; and certain it is that such cases as are now alluded to have in our hospitals hardly ever proved fatal except in old persons, who rarely recover from any form of our fever.

The cerebral affection which accompanies intestinal inflammation and ulceration is best met, according to our author, by treatment directed to the disorder from which it springs. When it becomes a prominent part of the disease, however, it is to be combated by the customary remedies applied to the head itself.

With these observations we quit Dr Bright's labours for the present. We say for the present, because the author continues his researches with vigour and assiduity; and has already announced an accumulation of materials for another volume of Hospital Reports. We are sure, from what has been said of his inquiries, that the reader will welcome his reappearance as warmly as we ourselves expect to do.

Art. III.—*Researches into the Causes, Nature, and Treatment of the most prevalent Diseases of India and of Warm Climates generally. Illustrated with Cases,* Post mortem *Examinations, and numerous coloured Engravings of Morbid Structures.* By James Annesley, Esq. of the Madras Medical Establishment, late Surgeon to the Madras General Hospital, M. R. C. S., M. R. A. S. In Two Vols. Vol II. London, 1828. Large 4to. Pp. 586. 19 Coloured Delineations. Pp. lxxx. of Appendix.

In the second volume of his work Mr Annesley enters upon the consideration of subjects, which, though less novel to the European practitioner, are, nevertheless, invested with great interest, from the circumstances under which the author has conducted his researches, and from the illustration which they afford of the general effects of morbid action. The volume consists essentially of two books;—the first devoted to the examination of the diseases of the spleen and pancreas, and those of the bowels; the second to that of the fevers of tropical countries, and more particularly those of India.

The first book is subdivided into five chapters, in which the author treats successively of diseases of the spleen and pancreas, inflammation of the small intestines, functional disorders of the large bowels, dysentery, acute and chronic, and, lastly cholera and acute diarrhœa.

The first chapter on diseases of the spleen and pancreas cannot be said to present much that is either new or unknown. Of the ordinary morbid states of these organs, and of the mode of treating them, the author gives nearly the same views which are found in the writings of those who have had occasion to treat the same subject. In distinguishing the morbid states of the pancreas, he experiences also the same difficulties with which the diagnosis of the diseases of that gland has ever been beset. In the treatment of the affections of both organs, he lays much stress after local depletion on the nitro-muriatic solution.

The second chapter, though on a subject greatly more familiar to the practitioner of temperate climates, possesses, nevertheless, more general novelty and interest. We shall notice a few of the pathological peculiarities of most interest.

Inflammation of the small intestines in India is generally the effect of some irritation applied to them from previous disease of the stomach, liver, or large intestines, sometimes of inflammation of these organs; and as the individual is cut off not by the intestinal disorder alone, but by the previous affection or the combined action of both, the physician has an opportunity of tracing the phenomena of the inflammatory process in all its different stages. The disease generally commences in the mucous coat of the ileum or rather of the jejunum, which is more vascular and florid, and somewhat thicker and softer than natural, particularly in the valvular folds; while the muciparous glands are reddish and enlarged. These appearances, which are most conspicuous in the *duodenum*, *jejunum*, and upper part of the *ileum*, may assume the form of streaks and patches variable in breadth and shape. The lower part of the ileum is in general still more conspicuously affected, especially when the inflammation is the result of previous disease of the colon; and in this situation the mucous membrane is affected by ulceration much sooner and to a much greater extent than in any other part of the tube.

Thickening of the intestine approaching to doughiness indicates the transition of inflammation to the submucous cellular tissue, and occasionally to the peritonæum, which then becomes traversed by minute red capillaries arranged in various forms, and afterwards coated with lymph. In some instances, however, these appearances take place only after ulceration has commenced in the villous membrane. This occurs in two forms, either in the proper mucous coat, when it forms amorphous broad patches situate at considerable intervals, or in the follicles, which are converted into small, orbicular, prominent ulcers, with an elevated margin and excavated centre, numerously collected in one space, with large portions of healthy intestine intervening. In some instances the villous coat is said to be excoriated,—a form of lesion, however, which is not more particularly defined; and in the most acute cases it is represented to have come off in sphacelated patches.

The commencement of inflammation in the peritonæal coat or substance of the intestine produces appearances which are often observed and well known in this country. In the description of Mr Annesley, the principal circumstance deserving notice is the facility with which it may be lacerated. The usual effects produced in the intestinal tissues by the inflammatory process are well illustrated by several good coloured delineations in the 22d and 23d engravings. The colouring is perhaps too high; but the general characters of morbid action are well preserved.

The mistreatment or neglect of this disease when not speedily fatal is followed by peculiar organic changes in the intestinal tube and appendages. The small intestines are pale, much contracted, and lined by a copious exudation of thick, cream-coloured, viscid matter, which seems to fill their calibre, cause the adhesion of their internal surface, and obstruct their canal. The large intestines are distended with air, and their coats are transparent and nearly empty. The omentum and mesentery are watery-looking and diaphanous, and their cells are loaded with serous fluid, or hard granular fat. As it is stated that this is the condition of the bowels in a large proportion of men who return from India in bad health, it is by no means improbable that it may be one at least of the conditions which cause the white or calcareous-like diarrhœa described by Dr Baillie, and which was always remarked in subjects of this description.

The treatment recommended as most successful in preventing these bad consequences, consists in bleeding from the surface of the belly to the extent of from thirty to forty ounces, according to the age and strength of the patient, followed by the application of warm poultices frequently renewed, and the exhibition of calomel and opium in doses of twenty grains of the former, with two or three of the latter, alternated by castor oil or the purging enema, till the irritability of the stomach is allayed, and the discharges become natural in frequency and appearance. To relax the skin and promote perspiration saline medicines and the occasional use of the warm bath are recommended. But the principal reliance Mr Annesley advises to be placed in the topical bleeding, and the continued use of the calomel and opium. Of blistering he speaks with uncertainty. In the chronic form of the disease the sanative effects of the calomel and opium are to be aided by the use of the warm aromatic purgatives, and embrocation of the belly by the nitro-muriatic lotion.

Accumulation of feculent matter and morbid secretion in the intestinal tube, which are frequent among the European residents in India, Mr Annesley represents as the fertile source of many disorders, and more especially of the worst cases of chronic diarrhœa and dysentery. Previous to this, however, they may induce various functional disorders of the alimentary canal, and thereby materially impair the general health by introducing into the circulation various matters which, during perfect health, are eliminated as excrementitial. As the theory of disorders of this description, and the most successful mode of removing them are well understood in this country, our readers will willingly excuse us from entering further on the subject.

One of the departments of this chapter, nevertheless, forms a more legitimate subject of notice in these pages. In many of the sickly European residents of India, the colon is liable to undergo a peculiar derangement in direction and position. It becomes stretched or elongated between its attached points; the direction of the elongated parts is variously changed from the original and natural position; and the structure of the bowel becomes occasionally injured. Thus the ascending portion of the colon may be much longer than natural, and may be convoluted or twisted in various directions between the *cæcum*, and its left or splenic flexure, (Plate 15.) Its transverse arch may be stretched in the same fashion, and made to assume sundry singular flexures totally different from those natural to it; (Plate 29.) Or finally, the sigmoid flexure, the position of which is still less fixed than any part of the bowel, and which by its length is liable to change situation, may be stretched and made to assume new directions; (Cases 153, 155, 156, 157;) descending deep into the pelvis, in the left side of which some of its folds may be found,—and forming morbid adhesions with the peritoneal coat of the bladder.

The causes of this form of malposition are various. In some instances it appears to be congenital, as the author represents it to be in a case in which it affected chiefly the transverse arch. In other instances, especially when seated in the right ascending portion, or in the sigmoid flexure, it is ascribed to habitual constipation producing by mechanical distension, anormal elongation and sundry unusual convolutions. In other instances, in which it is associated with more or less injury of the villous membrane and intimate structure of the bowel, it appears to have been a simultaneous effect of inflammation and ulceration of the organ. This inference is established by the necroscopic appearances found in cases 153, 154, 155, 156, and 157, in which the mucous membrane of the elongated portions was more or less inflamed, abraded, ulcerated, or gangrenous, and in which, probably, these conditions gave rise to the irregular movements in the bowel, which terminated in its elongation. Mr Annesley, however, it must not be forgotten, after ascribing the elongation to previous habitual costiveness, traces to this derangement all the subsequent changes in structure. It may be remarked, nevertheless, that in stating this in general terms, as the usual origin of the malposition, the ingenious author overlooks the circumstance admitted by himself, that elongation is a consequence not unfrequent of accumulation induced by morbid contraction, or stricture in some part of the colon, or occasionally of the rectum. As it is almost a general fact that stricture, especially in the intestinal canal, is an effect of inflammation, and a very frequent consequence of dysenteric inflammation, it appears more than questionable whether the colon undergoes any degree of elongation or malposition sufficient to be anormal, independent of the pre-existence of disease in its tunics. On this point, however, it is unnecessary to dwell. Mr Annesley has rendered the pathological student no trifling service in recording and delineating good examples of the disease; and while these cannot fail to instruct, the reasonings regarding the alleged causes are a matter of indifference.

In a second subsection, the author proceeds to consider a variety of mental derangement, which, like Pinel and Esquirol, he finds to be connected with more or less derangement in the functions of the alimentary canal. The supposed morbid state of this part of the system Mr Annesley does not define more particularly, than merely by styling it *derangement from loss of tone, connected with morbid accumulation and secretions* in the bowels; and the reader is therefore left to frame to his own conception an adequate idea of the disorder. Without positively denying the connection between morbid states of the alimentary canal and of the brain, and those intellectual operations to which the sound state of the latter seems indispensable, we think it is highly problematical whether that connection can be justly regarded as one of cause and effect. To whatever extent the functions of the alimentary canal are disordered,—to whatever extent accumulation and morbid secretion take place within its cavity,—it is exceeding doubtful that such a cause is adequate to induce derangement of the intellects. It is certain at least, that accumulation and morbid secretion take place to an extraordinary degree, yet without producing the effect alleged; and we have seen cases of various forms of mental derangement treated on this principle, yet without the success which its truth would lead us to anticipate.

In favour of the converse theory, that the morbid state of the alimentary canal when present,—for it is not uniformly so,—during mental derangement, is an effect and not a cause of the unsound state of the brain, a good deal of plausible evidence might be adduced. In almost all affections of the brain, the alimentary canal is torpid to an extreme. Its circulation languishes, its muscular actions are feeble and irregular, and the system at large appears to be less influenced than usual by the suspension of its actions and its morbid states in general. It may be even stated to be a part or effect of mental derangement to cause the individual to neglect, so far as depends on him, the natural actions of this part of the system. Even the ordinary medicines appear in this state of the system to fail to produce their usual effect; and it is only after a long and steady continuance of remedial means, and what is more to the point, after the employment of those topical measures, which tend to restore the sound state of the brain and its membranes, that the alimentary canal begins to manifest a tendency to return to the natural and regular action characteristic of health. In short, the dark coloured secretions, from which Mr Annesley draws a strong argument in favour of his views, might be with equal justice adduced as proofs of disordered function of the chylopoietic viscera, dependent in this instance on previous disorder of the brain and its coverings. If these morbid discharges are the result of a previous morbid state of the capillary and secreting system of the canal, the latter may be either a simultaneous effect of the same condition of the vascular system, which gives rise to the inordinate accumulation within the head, or it may be a consequence of the latter, which, after subsisting some time, impairs the energy of the nervous system.

It is just, however, to Mr Annesley, to remark, that while he argues for the morbific influence of the alimentary canal in inducing this variety of mental derangement, he assigns it only the influence of a remote cause. He admits a morbid state of the cerebral circulation, which, as the consequence and effect of the intestinal disorder, he regards as the immediate cause of the insane train of thought. This derangement he represents as consisting chiefly in that variety of monomania called *lypemania*, or the melancholy insanity. Some of the cases, notwithstanding, appear to have partaken of the haughty and ambitious alienation; and one or two of the acute form were distinguished by great excitement approaching to fury. In the treatment of these disorders, though in accordance with his view of the remote cause, Mr Annesley persevered in correcting the state of the alimentary canal, by a steady and effective system of administering purgative medicines, and occasionally by topical blood-letting from the abdomen, he was by no means negligent of the employment of those measures which, by acting directly on the cerebral circulation, tend to restore it to the exercise of its sound functions. This he effected chiefly by blood-letting, general or from the head by means of leeches, and by the application of cold to the scalp.

Hemeralopia, or night-blindness, as a derangement of vision depending on disorder of the alimentary canal, receives a portion of attention. It is common among the natives of India, in whom it is not unfrequently the consequence of insufficient nourishment and want of due attention to the functions of the bowels. In many instances it is connected with the presence of worms in the canal, from which they are discharged in great quantity by the use of the usual medicines. In most instances the author found a well regulated diet and the administration of purgatives perfectly adequate to the removal of the disorder; and to prevent its recurrence, the occasional exhibition of the same remedies, alternating or combined with tonics, was advantageous. For the complication with worms the anthelmintic purgatives, but especially calomel, castor oil, and turpentine, either by the mouth or by injection, were employed with success. The bark of the root of the pomegranate tree, both in the form of decoction and of powder, as recommended by Dr Fleming and Mr Breton, is represented as highly beneficial. When hemeralopia was combined, as it sometimes is, with pain and weight of the head, injection of the conjunctiva, and other marks of congestion, leeches to the temples, cold sponging, or blisters behind the ears, were resorted to with manifest advantage.

In the first section of Chapter IV. the author proceeds to the history and pathology of acute complicated dysentery. Disapproving of the division adopted by Mr Bampfield into mild, severe, and inflammatory, he agrees with most of the best recent authorities in regarding the disease as essentially inflammatory in all its stages, and as differing only in degree. Like Sir Walter Farquhar and Dr Ballingall, he represents it as consisting in inflammation of the cœcum, colon, and rectum (*colonitis*), and varying chiefly in the part of the bowel in which it commences. The history of this formidable malady is well pourtrayed by Mr Annesley, and bears the genuine and unequivocal traces of having been redacted, from the multiplied results of observation, in the native soil of dysenteric disorders. Nor less valuable is the description of that complex form of the disease which occurs in combination with previous or concomitant affection of the liver. The connection in this form of the disease Mr Annesley represents as of a twofold nature,—either that in which the dysenteric affection is a symptom of a morbid secretion of bile, or of the advanced stage of organic disease of the liver,—or that in which conversely the hepatic disease appears to be induced by previous disorder of the intestinal canal. These descriptions, however, we shall not attempt either to abridge, or to transfer in any other form to our pages. The reader will derive most pleasure, as well as advantage, from studying them in the original. A more proper subject for present consideration is found in the fourth section, which treats of the morbid appearances in dysentery.

The first circumstance to be noted is the aspect of the external surface of the large bowels, the colour of which varies from bluish-gray to greenish-blue, purple, and pink,—appearances to be ascribed in general to various degrees and forms of bloody transudation from the injected subjacent tissues. In some instances in which the inflammation and ulceration have affected the submucous tissue, the external or peritoneal covering of the bowel is distinctly inflamed, being traversed by injected capillaries.

A second circumstance is found in the displacements and elongations and anormal convolutions occasionally observed in the large intestine. One of the most usual of these consists in the sigmoid flexure being thrust down into the pelvic cavity close upon the bladder, to the peritoneal surface of which it is often found adherent by continuation of diseased action from the former to the latter. This fact not only proves the accuracy of the opinion above advanced regarding the causes of elongation and displacement of the colon, but furnishes the explanation of the symptom remarked by Sir Walter Farquhar, that the patient suffers much from retention of urine and other vesical complaints.

Distension of the cœcum and colon with fetid air, with general enlargement of the calibre of the bowel, is a common effect. In other cases not much less numerous, distended portions alternates with contractions of the intestine. Thus while the cœcum, ascending colon, and the transverse arch, are inordinately distended, the sigmoid flexure and rectum present a series of contractions, varying in number from one to five or six.

These constrictions are of two kinds. They may be the result of the irregular or spasmodic action of the muscular tunic, irritated by the inflamed surface, when they are temporary; or they may be the result of inflammation, thickening and cartilaginous induration of the intestinal tissues, when they are permanent, and of the nature of true stricture. Under such circumstances, they are the frequent consequence of the inflammatory process, which, though originally acute, has become chronic, or of repeated attacks of this process. These appearances are exhibited in the 26th and 30th, 33d, 36th, 37th, and 38th engravings.

When these constrictions are so great as to diminish very much, if not to obliterate, the cavity of the bowel, the portion above is usually inordinately distended; and in some extreme cases this distension may proceed to laceration of the colic tissues, causing effusion of the contents into the peritoneal cavity. This accident, which, however, generally occurs in a part of the bowel, originally much injured by previous disease, softened for instance by the inflammatory process, or the seat of more or less ulceration, gives rise, as in other circumstances, to secondary peritoneal inflammation, which is then fatal.

In severe cases, independent of this cause of laceration, the inflammatory process of the villous membrane may proceed so far through the tunics as to affect the peritoneal surface, inducing in that membrane the usual appearance of increased vascularity and developement of its capillary system, and the legitimate effects, albuminous exudation on the peritonæum, and sero-albuminous effusion in its cavity. These appearances are represented in the 22d, 23d, 24th, 25th, 26th, and 30th engravings.

The appearances now noticed are nevertheless mere secondary effects. The primary and essential character of the morbid process in dysentery is found in the villous membrane of the bowel. This is always more or less intensely injected, presenting various shades of the scarlet, crimson, or dark-brown tint. In cases cut off at the commencement of the disease, this is the chief and the only appearance. Much more frequently, however, necroscopic inspections take place when the inflammatory process has produced more or less extensive destruction of the intestinal tissue. The villous membrane is then softened, abraded, very often destroyed by ulceration, and occasionally struck by mortification to a greater or less extent, and either in the process of being removed, or actually detached from the subjacent muscular layer. The first effect of inflammation is represented to be abrasion, by which Mr Annesley understands the removal of the mucous membrane to a greater or less extent, in consequence of the extension of the inflammatory process to the submucous cellular tissue, and the consequent destruction of its connection with the villous membrane, which being thus deprived of its vitality is thrown off, leaving the subjacent texture red and excoriated. The truth of this representation, which indeed is delineated in plate 37, we do not question. But the process so described is by no means justly denominated *abrasion*, which, according to our observation and conception of it, is a much more superficial process. In certain forms and varieties of inflammation of mucous surfaces, especially when the process spreads extensively and continuously over a large tract, after the mucous membrane itself has become thickened and softened by the inflammatory process, the thin epidermis, which derives its nutrition from the mucous corion, is, by the unsound state of the latter, thrown off. The mucous corion is then exposed, red, denuded, and swollen, and too often in consequence is subjected to the process of ulceration. In other circumstances, however, it begins to secrete a new epidermis, which covers the villous membrane as before, but presents still a less perfect appearance than the original one.

The phenomenon termed abrasion by Mr Annesley is either a variety of ulceration or partial mortification of the villous membrane. At least it is impossible to draw a good line of distinction between this mode of detachment and that which takes place in these processes. The process of ulceration may take place in two modes, either in the villous membrane, properly so called, or in the minute glands or follicles with which the villous membrane is furnished. The first, which assumes the form of ulcerated patches, varying in size and shape, in the proper mucous membrane, appears to be quite the same with that described by Mr Annesley as abrasion. The author indeed represents these detached, excoriated, or sphacelated patches to be *uncomplicated*, that is, we imagine, independent of any ulcerative process. When patches are removed in this manner they must have been mortified; but even then their margins either immediately or soon present the character of ulcers. In short, since Mr Annesley does not distinguish very precisely between the process of abrasion and that of ulceration, accurate pathology would admit this part of his description with some allowance only.

In the second variety of colic ulcer, that taking place in the mucous follicle, the ulceration is described as minute, elevated, with a thickened or swelled margin or base, an excavated centre, sometimes granulating, sometimes sloughing. Though these are said to be most frequent in the cœcum, and next so in the sigmoid flexure and the rectum, it is admitted that the ascending and transverse portions are often deeply injured by these destructive processes. The parts affected by ulceration are occasionally much softened, and invariably very friable and lacerable.

A very uniform consequence of the inflammatory process in the colon is to render its component tissues much thicker, and sometimes harder than natural. This depends partly on the greater number of vessels with which their capillary system is loaded, partly on interstitial extravasation of albuminous or lymphy fluid. It is not uniform, however; and it is remarked chiefly in subacute or chronic cases, or as a consequence of repeated attacks of the disease. In certain cases in which the colon is of a pale-gray or sea-green colour, its tissue is extenuated instead of being rendered thicker.

In dysenteric cases the ileum suffers consecutively. The mucous surface is injected, pulpy and softened; and in some instances abrasion of its epidermis takes place. When dysentery is connected with disease of the liver either primarily or secondarily, the villous membrane of the ileum is remarkably diseased. In some instances Mr Annesley found it abraded and ulcerated. The spleen and pancreas are occasionally affected; and the mesenteric glands are enlarged, and present traces of increased vascularity.

In the treatment of this disease Mr Annesley is a decided advocate for the prompt and energetic use of antiphlogistic measures. He is anxious to impress on the reader the indispensable necessity of active proceedings at an early period of the disorder. If it be taken during its incipient or rather its premonitory symptoms, an ipecacuan emetic, followed in a few hours by a scruple of calomel, and this by a purging draught and enema, and the warm bath, will often avert the impending attack. If, however, these are inadequate, depletion from the system, followed by topical bleeding by numerous leeches, should not be deferred. If the first blood-letting be large enough, repetition is unnecessary. If, however, the sensations of heat, burning, and soreness in the course of the large intestine continue unabated or severe, no time should be lost in repeating the evacuation either generally or locally; and instead of being deterred by the circumstance of abundant intestinal hemorrhage, this, as in pulmonary hemorrhage, forms an indication and additional reason in favour of the measure. In cases in which general blood-letting appears no longer expedient or admissible, topical bleeding by a few leeches to the belly is a proper substitute, and often affords signal benefit. The necessity of these measures is evinced both by the appearances discovered by dissection, and by the conspicuous relief invariably resulting from their use. In natives and in old European residents local blood-letting is represented as sufficient, and in general preferable to depletion from the system.

Next to evacuations from the sanguiferous system, Mr Annesley, in common with many East Indian practitioners, lays very great stress on the employment of calomel in doses of twenty grains, combined with from two to three grains of opium. The operation of these, however, he justly increases by the use of castor oil, compound powder of jalap, the Rochelle salts, and the other mild and cooling purgatives. By these means not only are the bowels rid of morbid irritating secretions and their inflammatory condition alleviated, but the febrile heat of the system at large is much abated. With the same view injections are much commended. Those which Mr Annesley advises as most beneficial are linseed decoction, with supertartrate of potass, or Rochelle salts, and rice decoction with olive or castor oil. When the object is merely to allay irritation, five or six ounces of linseed or rice-decoction, with a few grains of opium, extract of hemlock or henbane, are more appropriate.

In addition to these means, it is often of the utmost importance to allay cutaneous heat, and determine towards the surface. With this intention, the use of hot poultices and fomentations, or the warm bath, are of much moment along with the opium. When these are inadequate, their effect Mr Annesley increases by the combination of some of the usual diaphoretics, as James's or Dover's powder. The warm bath is particularly indicated by dysury or strangury, or much tenesmus with frequent chills.

In the subsequent treatment, after all active symptoms have subsided, if pain in the course of the cœcum and colon should supervene, Mr Annesley advises the application of leeches, varying in number according to the severity of the symptoms, the state of the pulse, and the general strength of the patient. Even in the advanced stage of the disease, he impresses on the practitioner the necessity of not being discouraged by the state of the patient, though the continuance of the symptoms may lead to the suspicion of ulceration. He exhorts him, on the contrary, to proceed steadily and judiciously with the remedial means; and, as a highly interesting ground of encouragement, he adds, that he knew many cases of recovery in which the symptoms clearly indicated the existence of ulceration; and even after large portions of the mucous surface of the intestine had been detached and evacuated with the discharges.

In the treatment of hepatic dysentery the same general principle of controlling inflammation and removing irritating agents is to be observed. The complicating disorder, however, must be further removed by the administration of mercury to produce ptyalism. As this mineral seems, when given to affect the constitution in dysenteric cases, too often to accelerate the fatal termination, Mr Annesley is anxious to impress the necessity of administering it in such a manner as to disturb as little as possible the energies of the digestive organs and the general powers of the constitution. This object, he thinks, is best attained by the exhibition of scruple doses of calomel at bed-time followed by a purgative in the morning. This mode of management, which tends to improve the state of the intestinal secretions as well as those of the liver, whether they be torpid or vitiated, is most likely, according to the experience of the present author, to accomplish every useful purpose, without any of the damage too often resulting from mercurial medicines, in persons labouring under this disorder. We doubt, however, whether by such means the constitutional effects of the mineral can be obtained.

Mr Annesley afterwards enters at some length into the best manner of palliating or removing such symptoms as *tenesmus*, excoriations of the anus, *prolapsus*, *dysuria*, flatulence, hemorrhoids, and abscess in the vicinity of the rectum. The section is concluded with some judicious observations on such remedies as nitric acid with opium, nitro-muriatic acid, decoction and infusion of bark, camphor, mucilaginous substances, ipecacuan infusion, lime-water and calomel, in which the author attempts to appreciate the effects of these remedial agents.

In the sixth section of this chapter, on *chronic* diarrhœa and dysentery, we find a good description of the state of the intestinal tube in those maladies. Some of these are common to the chronic, with the acute form of the disease. Others are peculiar to the chronic. The small intestines are generally much affected. In chronic diarrhœa, particularly, the follicular glands inflame with swelling, and pass into ulceration, with thick elevated, and highly coloured edges. In other instances, the process of ulceration takes place in the proper mucous surface, without affecting the follicles. Contractions are frequent, especially in the cœcum and sigmoid flexure of the colon; and it is not very uncommon to find the component tissues of the large intestines thickened, hardened like cartilage, and of a dark colour. This change Mr Annesley represents as taking place much more frequently in the colon, especially its left arch and sigmoid flexure, than in the rectum, to which it has been supposed to be confined; and he is disposed to think that the same thing holds true in Europe.

In the treatment of this form of the disease, Mr Annesley confides still in calomel and opium at the hour of repose, followed by a cooling purgative in the morning, with the administration of calomel to the constitution, either by rubbing the camphorated mercurial ointment on the hypochondrium, or exhibiting the blue pill with ipecacuan or Dover's powder internally. The operation of these means is to be favoured by the injection of emollient and anodyne fluids into the intestine. After the employment of mercurials, Mr Annesley recommends a trial of nitric acid with opium, combined with the nitro-muriatic lotion on the hypochondriac region or the belly. With the occasional and alternative use of mercurial medicines, this is not incompatible.

In the latter stage of the disease, when general weakness is a prominent complaint, Mr Annesley recommends infusion of Peruvian bark, or of bark and rhubarb, with laudanum, as highly beneficial; and with ginger or the warm spices, when symptoms of ulceration are present. Astringents are recommended when the discharges appear to continue, as the consequence of habitual secretion. The author, however, cautions against the indiscriminate use of these substances, as tending by favouring accumulation, to irritate rather than soothe. The most powerful astringents are not unfrequently, it may be remarked, the immediate cause of fresh inflammatory action. Their effects, Mr Annesley observes, should be sedulously watched, and their employment generally requires to be alternated or combined with purgatives. When the disease is complicated with hepatic disorder, in addition to the use of mercurials, the internal use of the nitric acid, and the external application of the nitro-muriatic solution, counter-irritation by blisters, setons, or the pustulation of tartarized antimony, may be requisite. The ammoniated mercurial plaster, and the compound Galbanum, or compound pitch plaster, are also recommended as stimulants to rouse the torpid energies of the liver.

To alleviate tenesmus and *prolapsus ani*, the injection of small enemas, consisting of one part of vinegar to three or four of cold water, occasionally with four or five grains of the acetate of lead or sulphate of zinc, and a few drops of laudanum, are stated to be most beneficial.

When there is reason from the symptoms to suspect the presence of stricture or contraction, the first object of the practitioner is represented by Mr Annesley to be, to preserve the contents of the bowels in as fluid a form as possible; and next, as contracted parts are generally in a state of chronic inflammation or ulceration, to exhibit mucilaginous, refrigerant, and anodyne remedies, and to administer emollient soothing injections. When used with the view of softening the feces, as well as fomenting the parts, the common soap injection or linseed decoction, with a little castor or olive oil, form better applications than the more powerful and active cathartic remedies. In obstinate cases tobacco smoke has proved beneficial in the experience of the author. Among topical applications Mr Annesley places most confidence in the nitro-muriatic solution, the mercurial liniment, the compound camphor liniment, or the soap and opium liniment, rubbed assiduously over the belly.

For strictures of the rectum Mr Annesley recommends the usual local treatment.

Among the natives this treatment requires modification. Though the use of purgatives to expel morbid secretions and prevent intestinal irritation is indispensable, more liberal use of the stimulant and tonic method is in these persons requisite than in Europeans. Among the tonic and stimulant class of agents, colombo, catechu, kino, betel-nut, lime-water, pomegranate bark, serpentaria, cascarilla, simarouba, cayenne pepper, cinnamon, ginger, cloves, the black and white pepper, sulphate of zinc, and even sulphate of iron, are mentioned as most advantageous. The choice of these remedies, and their exhibition by the mouth or by injection, must be regulated by the discretion of the practitioner, according to the symptoms and the effects produced.

In the eighth section on scorbutic dysentery, the reader finds a short but distinct account of the characteristic symptoms and necroscopic appearances of that form of the disease. These consist chiefly in mollescence or softening of the intestinal tissues, which become thick and doughy, extravasation of blood into the cellular tissue and between the tunics generally, abrasion of the villous membrane, with foul blood-coloured ulcers, and occasionally mortified patches. In this state the intestines are easily torn, and are liable to give way during life. They contain much fetid air. The liver may be large, soft, and spongy, or pale, soft, and bloodless. The spleen is softened, dissolved, and falls into a putrid pulp.

The most successful method of controlling this disease by the exhibition of lime juice, and by the use of fresh animal food and vegetables, is well ascertained. As the lime juice itself purges, other remedies are rarely necessary. Where griping and tenesmus are frequent and severe, nevertheless, Mr Annesley recommends that the bowels be well evacuated by rhubarb, castor oil, or jalap, either alone or with supertartrate of potass, aided by the carminative powers of powdered ginger. Afterwards it is generally requisite to impart some tone to the intestinal tube, by the exhibition of such tonics and aromatics as bark, rhubarb, quassia, and cinnamon, or the aromatic confection.

In the fifth and last chapter, which is subdivided into three sections, Mr Annesley introduces some useful observations on diarrhœa, and the different forms of cholera, and the best mode of treatment. As these remarks are of much the same nature as those contained in the work of the author formerly published on that subject, and from which they appear to be abridged, and as they are introduced chiefly for the purpose of making the present work more complete and finished, it is quite superfluous to take further notice of them in this place. We therefore proceed without delay to take a view of the contents of the fifth book, or second part of the volume, and the last in the meanwhile of the author's work.

The first chapter, which is subdivided into four sections, is devoted chiefly to the etiology, the history, the pathology, and the diagnostic characters of fever. The view of the circumstances which operate as exciting and predisposing causes, though comprehensive and accurate, contains nothing particularly new or unknown to those who have perused the writings published at various periods, and more especially lately on the origin of the fevers of tropical countries. The observations on the types and forms of fever, and especially on the varieties of intermittent most frequent in India, are clear, and, upon the whole, interesting. The most valuable part of the chapter, however, is the third section on the complications and terminations of fever, and especially the concluding part on the appearances found in the inspection of fatal cases. This indeed tends chiefly to confirm the accounts already given by Lind, Jackson, Rush, Chisholm, and others. But as it furnishes the most complete description of this nature, and as it is not very likely that all our readers will have an opportunity of perusing it in the work of Mr Annesley, we shall give it entire for their edification and instruction. We shall merely premise a short abstract of the most frequent complications recorded in the experience of Mr Annesley.

The earliest, and perhaps the most ordinary local affection with which fevers in India are liable to be complicated, is an inflammatory state of the gastro-enteric mucous membrane, giving rise when confined to the stomach and duodenum to epigastric heat and tenderness, great thirst, nausea, and vomiting, with foul, red loaded tongue,—in the ileum to abdominal pain and diarrhœa,—and in the large intestines, to dysenteric stools and tenesmus. In some instances, this gastro-enteric or dysenteric affection, instead of complicating, follows the fever, and proves as mischievous as an attack essentially and primarily dysenteric.

The next, if not equally, frequent complication, consists in affection of the liver, either congestive or inflammatory, and tending with various degrees of rapidity to injure its organization. Of this the most usual effects are diminution or inordinate secretion of bile, which is invariably much vitiated in its qualities. The tendency of this morbid state of the hepatic vascular system is to enlarge, to indurate, and sometimes to change completely the structure of the organ. Such is a frequent effect of the double tertian or quartan ague, and of the remittent forms of fever. Suppuration and softening are common to intermittent, remittent, and continued fever.

Enlargement of the spleen, the frequent concomitant of ague, or of the remittent continuous fever, is more generally observed in the northern and elevated districts of India, than in the southern provinces. Though in some cases it gives rise to acute pain and tenderness of the left hypochondrium, in the majority the enlargement is indolent. This also is occasionally rather a consequence than a complication of fever.

Though the *pancreas* is often diseased in febrile attacks, Mr Annesley admits that it does not give rise to very distinct effects. In several fatal cases, in which the gland was found enlarged, with irregular steatomatous tumours in its substance, the surface was yellow during life, in consequence of the common bile-duct being obstructed by the pancreatic tumours.

Accumulation of blood in the head, proceeding sometimes to inflammatory injection of the brain and its membranes, constitutes a frequent complication of the continued and remittent forms of fever, especially in subjects who have been immediately before exposed to the solar heat, either in the course of duty or during intoxication. The appearance of the cephalic symptoms subsequent to the developement of those of general fever is the chief criterion to distinguish them from the idiopathic forms of cerebral or meningeal inflammation. This complication is common among recruits, and those who have arrived recently, especially at Madras, where the temperature is high. In an extreme degree the symptoms of excitement, as delirium, great restlessness, much muscular action, and occasionally spasmodic motions, are superseded by low delirium *(typhomania,)* stupor, and coma, constituting the typhoid or adynamic stage of the disease.

Pulmonary and bronchial affections are said to accompany fevers in the northerly provinces, especially during the cold and rainy seasons. Rheumatism is the disorder of the elevated districts of the northern provinces of Hindostan, and is occasionally observed to be connected with derangement of the biliary and digestive organs. Erysipelas is during certain seasons, and in low marshy districts, observed to supervene on slight scratches and wounds; and ulcers on the legs, which are common in similar situations, are liable during the prevalence of epidemic sickness to become inflamed, and form intractable if not fatal sores.

The state of the internal organs giving rise to these appearances respectively may be understood from the following extract.

> "The membranes of the brain are frequently observed to be more vascular than usual. Sometimes the arachnoid is opaque, and a clear or slightly yellowish serum is found between the membranes and in the ventricles of the brain. The substance of the brain often betrays increased vascularity by the number of bloody points observed in the divided surface; in some cases it is softer than natural, and

in others it is firmer. In the inflammatory forms of fever, and where the cerebral determination is great, the above appearances are most strongly marked. In the adynamic or malignant forms, the most uniform and prominent lesions of this part of the body are great congestion or enlargement of the veins and sinuses of the head, and sometimes effusion of serum between the membranes or within the ventricles of the brain."

"The thoracic viscera seldom betray marked signs of disease, unless in those forms of fever in which pulmonary affections had supervened in its progress, or which were accompanied with this local derangement. In such cases, portions of the lungs have been found hepatized, and the bronchia loaded with mucous or muco-purulent matter, and the mucous membrane of the air-passages inflamed in patches. In scrofulous subjects, and those of a phthisical tendency, tubercles in their various stages have been detected in the substance of the lungs."

"The heart generally presents few marks of disease. The right cavities are often greatly loaded with blood, and the pericardium sometimes contains a little serum. In the malignant and adynamic forms of fever, the substance of the heart frequently seems much softer than natural. In cases of this description, the blood in the right auricle is often semifluid and of a very dark colour; and the pericardium contains a considerable quantity of turbid serum or of sanguineous fluid. Effusions of serum are sometimes observed in the cavities of the chest, especially in those who have died of the remittent or intermittent types of fever."

"In some of the protracted cases of ague, especially when complicated with organic disease of the liver or spleen, dropsical effusions into the shut cavities are not unfrequent; and in such cases the effusion into the cavities of the thorax is often very considerable. When the patient dies of the cold stage of ague, which rarely happens, the lungs are usually greatly congested with dark-coloured blood as well as the auricles of the heart, especially that of the right side: the veins and sinuses of the brain are also gorged with black blood. In all cases of this description the circulating fluid seems not to have undergone its usual changes in the lungs to the full extent, for a short time before death; as even the blood found in the arterial trunks is darker than natural."

"The viscera contained in the abdominal cavity almost always present marks of disease. But these are not confined to a single organ, nor are they of a uniform character. Many of these morbid appearances have been alluded to in our remarks upon the local affections which arise in the course of fever."

"The stomach is frequently found distended with air, and its external surface and tunics, especially in the situation of the spleen, inflamed, congested, in a few cases ulcerated, and occasionally of a purple hue. In short, this viscus presents nearly the same appearances, especially as respects its mucous surface, as have already been described when treating of the inflammatory diseases to which it is subject. (Vol. i. p. 265 and 282.) Lesions of the stomach, particularly in its internal surface, are most frequently met with in the bilious and malignant forms of fever, or in those cases of the inflammatory kind which have run into the adynamic and malignant form."

"The spleen presents also lesions in every respect similar to those already described. (Vol. ii. p. 3 and 4.) These lesions are chiefly observed in fatal cases of protracted ague and remittent fever, or when continued fever runs into these forms, and ultimately proves fatal. In the malignant kinds of fever, the spleen is often observed enlarged and uncommonly softened, so as to resemble a semifluid or gelatinous mass. In some of the inflammatory kinds of fever, the surface of the organ is found inflamed and thickened, and even adherent to the stomach or the abdominal parietes. In fatal cases of ague it is generally much enlarged; sometimes softer, at other times harder than natural; occasionally tuberculated; and not unfrequently it contains hydatid-like bodies. In some cases of ague and fever, terminating fatally in the cold stage, the spleen has been found uncommonly gorged with blood; and in a few cases we found it ruptured, and an immense quantity of blood effused into the abdominal cavity. Morbid appearances of the spleen are most frequently found in the fevers of low marshy situations, on the banks or mouths of rivers, and in the more northerly districts of India; or in those places in which malaria is most concentrated."

"The liver seldom is found in fatal cases of fever without some marks of disease. Indeed, some one or more of the various morbid appearances formerly described are generally observed; but it is chiefly the internal structure of the gland which presents signs of disease. In agues and remittents, enlargement with tubercular formations are not unfrequent. Congestion, as respects both blood-vessels and biliary ducts, is very frequently remarked; and in the inflammatory and bilious forms of fever, not only are these sets of vessels congested, but signs of greatly increased arterial action are present, sometimes extending to the surface of the gland, and producing adhesions between it and an adjoining texture. Occasionally purulent collections, or even large abscesses, accompany the foregoing lesion; and in a few instances these latter have opened in some one of the situations enumerated." (Vol. i.)

"In the malignant forms of fever, and in many of the cases of the inflammatory and bilious kinds which terminate with adynamic symptoms, the liver is of various shades of colour, from a pink to a purple or blackish hue, much softer in its texture, and varying in bulk, being in some few cases smaller, but in the majority larger than natural. In fatal cases a deeper shade of colour, with considerable venous congestion, is associated with enlargement and softening of the gland."

"Marks of disease of the intestines are generally confined to their external tunics. The duodenum and the ileum, especially towards its termination, are very frequently diseased in their mucous surface, which is inflamed in patches, sometimes covered with a mucopurulent secretion, and studded with small ulcerations. Occasionally the mucous surface is of a brick-red or purplish shade of colour, apparently ecchymosed, and covered with bloody sanies, and readily detached from the subjacent texture. In several cases the ulcerations, which are sometimes large and far apart, at other times small and agglomerated, nearly penetrate the intestinal tunics; and in a very few cases we have observed this occurrence, the contents of the bowels being partly effused into the peritoneal cavity, and having produced peritonitis."—" Inflation of the small intestines, constriction of their diameter, and all the other lesions described when treating of their inflammation, (p. 24,) have been occasionally remarked during the inspection of fatal cases of fever."

" These morbid appearances are generally found in fatal cases attended with bilious characters, and afterwards distinguished by the supervention of diarrhœa and dysentery. They are most frequently seen in the remittent and continued types, and often in those cases which assume in their progress an adynamic or malignant form."

" Derangements of the internal surface of the large bowels are uniformly remarked in those cases of fever which are attended with dysenteric symptoms, and consist chiefly of ulcerations of the same kind as already described when treating of dysentery, and of the lesions characterizing the chronic forms of this disease."

" Marks of inflammatory action are occasionally met in the peritonæum, omentum, and mesentery, in all the forms of fever; and in protracted cases of the remittent and intermittent types, especially those in which the liver and spleen are obstructed or otherwise diseased, considerable effusion of serous fluid into the cavity of the abdomen are not uncommon. In these cases the peritonæum presents either a sodden appearance or congestion of the veins; and the mesenteric glands are enlarged, of a light colour, and hard consistence."

If these extracts do not demonstrate the nature of fever, they contain much valuable matter on the effects at least of the morbid process of the malady. We should willingly attempt to communicate some idea of the observations of Mr Annesley on the circumstances which determine prognosis in the fevers of India. This, however, is impossible, within the limits prescribed to this article. With equal reluctance we pass over the second chapter, in which the author takes a long and elaborate view of the best means of treating fevers, and of the merits of the different methods and remedies which have been at various times proposed for this purpose. It may be enough to say, that Mr Annesley is on the whole desirous to inculcate the necessity of the antiphlogistic and depleting method, especially at the commencement; and though in certain forms and stages of the disease he admits the use of tonics, alteratives, and other supposed specifics, he is anxious to admonish the practitioner, that he must ever look to the tendency which the disease betrays to inflammatory or congestive disorganization.

After a short chapter on the management of convalescence from fever and dysentery, and on change from a hot to a temperate climate, during or after recovery, Mr Annesley concludes his work with a highly judicious and sensible essay on the management of European troops upon their arrival in India, and during their stay in that country, with a view to mitigate the prevalence of disease among them. The observations of the author are chiefly directed to the improvement of the condition of the European troops, in the articles of bed-accommodation and clothing, the regulation of diet, and preparation of food, the adjustment of the season for marching and other severe duties, the provision of water, and the allowance of wine or spirits when thought requisite. Though these observations are not delivered in very systematic order, it is a proof of their intrinsic merit that they are read with much interest; and we may add, that they are in all respects not only so excellent, but, so far as we can perceive, so practicable, that we trust those who are interested in preserving the lives of his Majesty's soldiers will lose no time in attempting their adoption.

In concluding the foregoing sketch, it is with pleasure that we say that there is much to praise and little indeed to blame. The diligence of the author in collecting the materials of his work appears to have been indefatigable; and, with some few exceptions, they are well selected and not injudiciously arranged. If he errs, it is rather from a wish to do too much, than to finish his work in a slovenly manner. Though he is rather inclined to make his chapters and sections complete, by collecting from other authors information which the reader does not expect from him, and which is sometimes not so judiciously done that it might not have been spared, still the quantity of valuable matter, the result of original observation, is so great, that it well compensates for any supererogatory work of this description. To many the work will appear to be loaded with an unnecessary number of cases; for where the reader reposes any confidence whatever in the generalizing talents of his author,—and it is clear that no one can be a useful author without some proportion of this faculty,—many individual facts, unless upon points new, unexpected, and misunderstood, are seldom of much use, and are almost never consulted. That these two circumstances, with the splendid manner in which it is printed, concur to render the book much too bulky, and therefore too expensive, and not of such general utility as it might have been, no one will doubt. It is indeed no inconsiderable error in the publication of the work, that its great size and expence must render it almost inaccessible to the very class of practitioners to whom chiefly its contents are calculated to be useful. To the regimental surgeon, either of the army or the Honourable Company's service, it must be a matter of extreme difficulty to carry so large a work without injury to the various situations to which his duties call him. For this purpose an octavo of much more economical typography would have been infinitely better adapted; and if the engravings still require the quarto size, a thin quarto would have answered the purpose. If Mr Annesley wishes his book to be generally read, this should yet be done. An octavo edition is indispensable, he must allow us to say, to those who are attached to the medical staff either in the East Indies or in any other intertropical country.

ART. IV.—*The Morbid Anatomy of the Bowels, Liver, and Stomach, illustrated by a series of Plates from Drawings after Nature; with explanatory Letter-press, and a Summary of the Symptoms of the Acute and Chronic Affections of the above-named Organs.* By JOHN ARMSTRONG, M.D. Lecturer on the Principles and Practice of Physic, and Consulting Physician to the London Fever Hospital. Fasciculus I. and II. London, 1828.

THE two numbers now before us are the commencement of a work which forms another indication of the prevalence of that spirit with which we have repeatedly had occasion to notice morbid anatomy continues to be cultivated. Twenty-five years ago the work of Dr Baillie was the only English one in which an attempt was made to represent, by delineation, the changes effected in the organs of the human body by disease. Since that time the pursuit has been cultivated with various degrees of zeal and success by different authors; and the number of delineations which have been made and not published may be, without injustice, said far to exceed the number which has been published. The collection, in particular, made by an eminent teacher in this city is very rich in the most useful and instructive specimens of morbid action and structure.

On the value of collections of this nature one opinion only can be entertained. If they possessed no other advantage but that of obliging physicians to look more intimately into the nature of morbid actions and their effects, that would be by no means inconsiderable. It is obvious that the more we contemplate the sensible though minute characters of these processes, the more intimately we examine those delicate changes in organization which seem imperceptible, and which have been too often overlooked, the less shall we have recourse to hypothetical and imaginary causes of disease, and the better shall we understand those complicated and obscure symptoms which always perplex the mere practitioner.

It is chiefly under the impression of such thoughts that Dr Armstrong has given to the profession the specimens of pathological delineation in the present engravings. Actuated by that zeal which distinguishes the lover of useful science, he had collected various examples of unsound organization and structure of the stomach, bowels, and liver, with which it was his intention to have illustrated a projected work on the diseases of these organs in children and adults. Meanwhile, as his professional duties prevent him from completing this work at present, he has been led to publish the delineations first, with explanatory description and accounts of symptoms.

It is not the intention of Dr Armstrong, nevertheless, to give delineations of all the morbid appearances taking place in the stomach, bowels, and liver, but to select those only which are of greatest consequence, and which have been attentively examined by himself, and, upon the same principle, those on which he had watched the symptoms during life. The reader will of course be desirous to know to what extent the author succeeds in his undertaking.

The preliminary remarks, which extend to thirty-one pages, are chiefly employed in attempting to explain the origin of morbid action, and the growth of morbid products. For this purpose Dr Armstrong makes most liberal use of the blood, to variations in the quantity and quality of which he ascribes almost every variety of anormal action, and every form of unsound structure. Adopting some recent views, which ascribe to this fluid electric or electro-galvanic properties, he labours ingeniously enough to establish the inference,—that in many, if not all morbid actions, the proximate principles of the blood are changed, the relative proportions between them are altered, and the whole fluid is vitiated. Upon the same principle he has recourse to the secretions from the blood, which he alleges have been too much neglected in the explanation of morbid action; and, finally, to the phenomena of the formation of morbid products, all of which are to be regarded, he thinks, as mere morbid deviations of the healthy action of nutritious deposition.

This theory has the advantage of simplicity, but not of novelty; for if Dr Armstrong will look into the Institutions of Boerhaave, Gaubius, or any other of the once numerous pupils and commentators of the Boerhaavian school, he will find it nearly in all its pristine vigour and elegance. To inquire into its merits, or to expose, if it should so happen, its weakness, is not our intention. We know that before the march of genius all difficulties disappear; and the theory which to-day is a contemptible outcast, may to-morrow be received with open arms as the first-born, if not the personification of truth herself.

It would be unjust, however, to the author to represent him as contending for the supremacy of the fluids only. To these he wishes merely to assign what he sincerely believes to be their just influence. The remarks are concluded with some sketches of the phenomena and effects of the inflammatory process in the tissues of the stomach. These observations, though written in the easy and fluent style for which Dr Armstrong is distinguished, are, nevertheless, rather desultory and destitute of precision for a work of science.

The engravings are done from stone; and, considering this circumstance, they possess very great merit. As works of art various opinions will be entertained upon them. In some the shading will be found defective, and the lines rather stiff; in some the colouring may be thought not very judiciously applied; and in several the perspective may seem not very well observed. Throwing aside, however, these trifling objections, which perhaps are inseparable from the lithographic method; and viewing them as representations of morbid parts, they are entitled to much commendation, and cannot fail to be very highly prized by the student of pathology. The essential morbid characters are distinctly represented; the colouring is generally faithful; and though the outlines are not so delicate as they are from copper, they communicate a very good idea of the objects. We may also add, that the specimens delineated are well selected.

The two fasciculi now published contain ten lithographic engravings of morbid changes in the œsophagus and stomach. In the first engraving is represented inflammation of the peritonæal covering of the stomach; in the second that of its mucous membrane; in the third attenuation with mollescence and solution; in the fourth perforation as it takes place in the stomachs of infants; and in the fifth the effects of inflammation affecting all the gastric tissues. In the second fasciculus, which is devoted chiefly to the representation of organic changes and new products, the sixth engraving exhibits a highly coloured but good specimen of two varieties of ulceration, the common and phagedenic, as they take place in the stomach. In the seventh is given a good delineation of inflammatory structure of the gullet, and a very good delineation of scirrho-carcinoma of the œsophageal cellular tissue, distinctly and happily represented. The eighth is an instance of the encephaloid fungus affecting the *cardia*; the ninth of the same tumour in the mucous membrane of the stomach, in the two stages of tumour and mollescence or decomposition ; and in the tenth we find a specimen of the fibro-cartilaginous or ordinary scirrhus, and another more uncommon, which the author distinguishes as the scaly or cauliflower-like scirrhus.

Into the merits of the individual engravings it is neither requisite nor convenient to enter. To those who have little or no opportunity of examining original and especially recent specimens of disease, these engravings must prove highly useful. The descriptions with which they are accompanied will also be useful, not only in explaining the specimens to which they belong, but in communicating good general notions of unhealthy action and structure. Upon the whole, the present specimen promises very well for the work which Dr Armstrong intends to publish ; and we sincerely hope that the manner in which it will be received by the profession, may afford unambiguous encouragement to the author to proceed with his useful undertaking.

ART. V.—*A Practical Treatise on the Typhus or Adynamic Fever.* By JOHN BURNE, M. D. Licentiate of the London College of Physicians; Honorary Sec. for For. Corr. of the London Medical Society; and formerly President of the Royal Medical Society of Edinburgh. London, 1828. Longman, &c. pp. 248. Octavo.

THE treatise of Dr Burne gives a succinct account of the prevalent type of continued fever as it appears in London. This account is drawn up entirely from personal observation, which the author informs us he was led to turn particularly to the subject, in consequence of his being dissatisfied equally with his own knowledge of the nature of fever, as with the doctrines maintained by various past and living authorities,—doctrines which he represents as not less discordant among themselves, than irreconcilable with the actual phenomena of the disease. Under these impressions he had recourse to nature, availed himself of the opportunities of study which are liberally afforded by the directors of Guy's Hospital ; and after continuing his researches four or five years, observing with minuteness the symptoms throughout the disease, and the appearances left in the dead body, he came to the resolution of publishing the results in their present unencumbered form. His object being simply to record what he has himself seen, he takes little notice of the inquiries of prior modern authors. Yet, although he nowhere descends minutely into their doctrines or the arguments by which they have endeavoured to support them, he takes occasion to apply his own facts briefly and pointedly, wherever they are available towards deciding the important questions which at present divide the learned of the profession at home and abroad, regarding the essence or nature of fever,—the varieties under which it may show itself,—the relation in which it stands to the local inflammatory disorders that often accompany it,—and the respective value of the various and discrepant modes of treatment, which, under various views of its nature, have been proposed, and are still put in force by different physicians of repute.

He sets out with attempting to settle how many species of fevers may be recognized ; and, soon arriving at the conclusion that a reference to clinical observation will admit of two only, an *Inflammatory* and an *Adynamic* fever, he singles out the latter as the most important in point of frequency and fatality, and devotes his whole attention to it alone. The meaning of the term adynamic is next carefully determined ; and the *adynamia*, or essential character of this form of fever, is defined to be " a state of debility from a depression or prostration of the powers of the nervous and muscular systems, unconnected with ordinary debility from loss of blood, or wasting of the physical powers." This being understood, he proceeds to describe the general symptoms of Adynamic fever, its various manners of attack in the commonest cases, and the chief differences in its features, arising in such cases from differences in degree. To this section are appended a few remarks on certain peculiarities in the manner of attack, and in the adynamic state which prevails throughout the course of the fever. He then goes on to mention the several local inflammations by which the simple adynamic fever may be complicated,—declaring very decidedly his belief in the existence of essential fevers, and his opposition to the doctrines of Broussais, Clutterbuck, and their followers. Next comes a rather desultory chapter, in which he discusses the varieties and indications of the adynamic pulse and tongue, the nature and cause of the tympanitic belly, the black fetid diarrhœa, ochrey diarrhœa, and retention of urine which often attend this disease, and the condition of the blood during life and after death. Another desultory chapter treats of the causes which retard convalescence or prevent recovery ; and under these heads he takes advantage of the opportunity of treating generally of convalescence and relapses. Advancing now towards more debateable ground, he considers briefly the causes of Adynamic fever, and endeavours to prove that a material difference in its phenomena and progress is observed, according as its primary cause,—a poisoned atmosphere,—acts alone on the body, or is aided by the concurrence of accidental causes, such as cold, wet, mental emotions, intoxication, and the like. The diagnosis and prognosis then receive some short notice, after which he dwells fully on the appearances he has witnessed in the dead body, and the explanation of the mode in which they had been caused. From this subject he passes to the *rationale* of the symptoms, more particularly of those referrible to the head; and traces the difference subsisting between the state of the brain in adynamic fever and in phrenitis. The seat and nature of the disease, or what systematic writers, till within these few years, have called its proximate cause, receive a share of the author's attention in their turn; and he finally winds up with minute instructions as to the treatment, dividing what he has to say on this subject according to the divisions embraced by the prior part of the work. That is, he discusses, first, the respective efficacy of the various remedies that have been recommended for the simple adynamic fever, namely emetics, aperients, bark, cold affusion, ventilation, febrifuges, blood-letting, mercury, opium, and hyoscyamus, stimulants; and secondly, he considers the different plans of treatment that have been suggested for more special purposes, such as the treatment for preventing the formation of the fever, and for arresting it in the early or advanced stages,—the variations required in the treatment by difference in the degree of the fever,—the alterations required by peculiar symptoms, among which may be particularized palsy or apoplexy, *adynamia* without fever, congestion during fever, local inflammations during the progress of the fever or after convalescence is established, tympanitis, black diarrhœa, ochrey diarrhœa, retention of urine.

It is clearly impossible for us to do the author justice, or communicate any useful information to the reader by attempting to analyze and investigate what has been said on all these diversified and important themes in the limited space of his small volume. All the purposes of this review will be much better served by our inquiring more minutely what light Dr Burne has succeeded in throwing on the chief points of dispute among existing authors, as to the pathology and treatment of continued fever generally, and of Adynamic fever in particular. With this end in view, we shall attempt to ascertain, *first*, how far Dr Burne's division of fevers is natural and tenable in practice; *secondly*, whether he has succeeded in setting at rest the question regarding the existence of essential or primitive fevers; *thirdly*, what truth or plausibility there is in his theory of the nature or proximate cause of adynamic fever; and, *lastly*, we shall enter into the merits of the treatment he has proposed, especially where the remedy is new, or brought forward under new circumstances.

A few general observations may be premised, however, on the leading merits and defects of his work. Although the resolution of a young inquirer to disengage his mind from the fetters of authority and to observe for himself is doubtless highly commendable, and in the case of prospective authorship even necessary, we see no reason why, in elucidating a subject on which so much excellent information has been already collected and so little remains to be said that is altogether new, our author should not have pointed out to his reader where the generalizations, at which he has arrived by studying nature, correspond with the results obtained previously through the same means by others. The value and authenticity of his facts would certainly not be diminished by so doing; his predecessors are entitled to some acknowledgment of the kind; and, what is as much to the point, enough of original matter would still remain to entitle Dr Burne to the name of an acute, ingenious, and accurate observer. Another defect, which is rendered a material one by his having neglected to fortify his conclusions by the testimony of his predecessors, is the exceeding brevity with which he describes the progressive steps of his own inquiry. His work abounds too much in generalizations without their component facts. To mention only one example out of many we could bring forward:—it would have been no small addition to the value of his treatise if he had given the reader a distinct idea of the extent of his field of observation,—of the proportion of adynamic to inflammatory cases, and of primary adynamic cases to those in which the fever was accompanied with local inflammations, with venous congestion, with palsy, diarrhœa, and such other accidental disorders. A great part of the deficiency now alluded to could, we presume, be easily supplied by the author from his original materials; and if so, we should recommend him to make the improvement with the first public opportunity which may be afforded him. A third general defect in the work, and one which has struck us more forcibly than any other is that, while he describes only what he saw, and should therefore have limited his inductions as applying chiefly to the fever of London, the terms in which his statements are conveyed must lead us to suppose that he conceives the type of the London fever to prevail likewise everywhere else. Hence many of his nosographical, pathological, and therapeutic results, though, so far as we know, perfectly true in regard to the fever of London, will not stand the test when applied to some of the prevailing fevers of this city or to continued fever generally. In particular it will be found, that some of the denunciations he has uttered under the head of the treatment are much too sweeping when understood in a general sense, as embracing the practice of physicians in various localities. The main tendency of his facts and reasonings is to assign a predominating importance to the adynamic state of the system during fever, to represent it as more frequent than many imagine, more invariably united with a certain concatenation of symptoms, and more to be regarded in the diagnosis, prognosis, and treatment. That he has been led away by relying too much on his own experience, and has in consequence exaggerated the importance of the *adynamia* or nervous debility of fevers generally, will appear at once in what we have to say of his nosographical arrangement.

The substance of his inquiries under that head is, that a fever arising usually from cold, and accompanied with all the characters of the symptomatic fever of the Phlegmasiæ, but without the local inflammation, constitutes the basis of his arrangement, the *Simple Inflammatory* fever, a disease which he says rarely lasts more than a day, and of which, although many doubt its existence, he has seen *one* very well marked case;—that this affection is often combined with local inflammatory disorders, constituting the organic inflammations, as pneumonia, enteritis, hepatitis;—but that it is never attended with nervous debility or an *adynamic* state of the nervous and muscular systems, independent of the exhaustion caused by long continued disease or debilitating treatment;—that when this nervous debility or *adynamia* is distinctly developed, the fever assumes quite a different type, the leading character of which is excessive prostration of strength disproportionate to the duration or severity of the febrile excitement, or to the wasting of the body;—and that this species of fever may like the former be accompanied with local inflammations, which are merely accessary or accidental, and which are modified by the prevailing *adynamic* or exhausted state of the nervous energy throughout the system. Under this second division he comprehends "the putrid or malignant fever of Sydenham; the slow nervous fever of Hexham; the nervous fever of common language; the synochus, typhus mitior, and typhus gravior of Cullen; the jail and hospital fever; the *fièvres essentielles* of the French; the epidemic of the Irish writers; the contagious of Bateman; the typhus of Dr Armstrong; the proper, essential, or idiopathic fever of Dr Clutterbuck;" besides the host of still more subordinate titles which these fevers have received, when they have been accompanied by local inflammation. All these forms of fever, he maintains, differ from one another in degree only or in some accidental peculiarity; and all agree in exhibiting the distinguishing character, excessive exhaustion of the nervous and muscular systems, or an *adynamic* state of the functions, which shows itself equally in the essential signs of the general pyrexia, in the accidental phlegmasiæ or other affections occasionally combined with it, and in the changes effected by various remedies on the constitution.

It would be fruitless to attempt following our author where he describes the four degrees of his primitive or *simple adynamic fever*, or the numerous subordinate varieties of which these degrees are the bases. His narrative is much too succinct and precise to admit of a useful abridgement. It will be sufficient for us to observe that, according to Dr Burne's observation, when the *primary* cause, a poisoned atmosphere (whether by miasma or infectious effluvia he does not inquire) acts alone on the body, the simple adynamic fever is produced ; and when this primary cause acts along with other *accidental* causes, such as cold, intoxication, and the like, local inflammations are usually combined with the fever :—That the former or simple variety usually begins slowly, the latter more suddenly :—That the *adynamia* is equally obvious in both :—That in the simple form the pulse is full, open, soft or at least compressible, rarely much above 100, generally under it ; the skin seldom very hot or, except on the face, red ; *the blood in an altered state, so that it flows slowly from divided vessels, is blacker than usual, coagulates less firmly, rarely shows the buffy coat, and in the dead body is found black and fluid ;* the sensibility throughout the whole body blunted, not excited, the mind being in the same state nearly as in excessive somnolency, the organs of the mouth insensible more or less to thirst, the intestines and bladder of urine insensible to the stimulus of their contents, and unable to impel or expel them :—That in cases complicated with local inflammation the character of the pulse and qualities of the blood are altered somewhat, and assume more of their usual inflammatory character, which, however, still continues imperfectly developed, so that the pulse is seldom hard, and the blood rarely very buffy, never cupped ; while on the other hand, the local inflammation is in its turn materially modified, its signs during life being less characteristic, and the organic changes less extensive, and much more easily removed by the powers of the constitution, when convalescence is established :—That in consequence of these peculiarities the Adynamic fever, both simple and complicated, will not admit of the vigorous depletory measures which are applied with advantage in the case of simple inflammatory fever, or of local inflammation.

Now every unprejudiced reader who is practically conversant with our epidemic fever, and who considers these general statements, or traces them in the author's work to the basis of facts on which they have been founded, will at once agree with us in opinion, that Dr Burne has given an admirable description of one very common form of the disease. We have his Adynamic fever in all its degrees and subordinate varieties daily before our eyes in the *closes* and hospitals of this city; and we cannot perhaps express our opinion of his work in stronger or clearer language, than by avowing that, if we were about to relate our own experience, and that of our brethren *in this particular variety* of the Edinburgh fever, we could hardly choose a more characteristic and complete narrative than that of Dr Burne. In point of perspicuity, precision, and simplicity of description, we should be well pleased if we succeeded in resembling him; and as to his particular facts and the inductions founded on them, we should find little to add and not much to take away. We do not know whether he will be indebted to us for informing him, that we should discover little to alter even in his description of the treatment; and that, notwithstanding his insinuations against the practice pursued at a "celebrated University," he will find our hospital practitioners are by no means ignorant of the advantages of mercury in some bad varieties of his adynamic fever, or of the necessity of mitigating, in all the varieties of that form of fever, the vigorous blood-letting which during his studies he saw employed in the epidemic of 1817–20, and which some pupils, more unthinking and unmeasured in their admiration than himself, have been too apt to transfer to all succeeding epidemics here and elsewhere, whatever might be their epidemic character.

But if, as Dr Burne appears to intend, his own observation in fever is to be understood as representing that of the profession generally, in other situations and in other epidemics,—if his work on the Adynamic fever is supposed by him to comprehend the nosography, pathology, and treatment even of all the common continued fevers of this country,—then we must charge him with committing a grave error, which it is material to rectify.

We say he appears to us to intend his work to be received in this general acceptation. In laying down his arrangement of fevers, indeed, he tells us he excludes from his work Inflammatory fevers, both simple and complicated with local inflammation. But it is clear from his whole narrative, that he assigns to Simple Inflammatory fever a far less important place than it ought to hold in an arrangement of continued fevers, and that Inflammatory fever, complicated with local determinations or with actual inflammation, is confounded by him with the idiopathic Phlegmasiæ, which it certainly does greatly resemble, but from which it has always appeared to us to be as distinct as the author's Adynamic fever, when accompanied with its local complications.

He tells us, while expounding his arrangement of fevers, that he takes as its basis the simplest form of primary or essential fever, an Ephemera, without nervous debility, or local inflammation,—adding that he has seen a characteristic example, and consequently that some authors do wrong in denying its existence. We may advance to his support, in defence of this statement, by assuring him that such cases are not uncommon here; that we have personally had the disease, and seen it within the last three months in at least four patients; that it was not unfrequent at the time the author studied in this city; and that we should presume it may be often seen wherever the form of inflammatory fever prevails, which we are about to describe,—for in truth it has generally, though we admit not always, appeared to us nothing else than an effort of the infection of continued fever to develope the disease in a seasoned constitution. The author then proceeds to say, as we have already remarked, that when his *Simple Inflammatory fever*, as thus described, becomes accompanied with local inflammation, it lasts longer than a day and constitutes the common Phlegmasiæ, such as pneumonia, pleurisy, enteritis, and the like. Having settled this much, he excludes Inflammatory fever, simple as well as complicated, from his work; in doing which, he obviously excludes no more than the idiopathic Phlegmasiæ and a rare case or two of Ephemera, leaving all other forms of continued fever to be comprehended under the general head of his adynamic species. An essential fever, then, of an inflammatory character, is barely recognized by him, while an *idiopathic* inflammatory fever with accidental local inflammation is not acknowledged in his distribution at all.

This mode of arrangement may apply very well to the continued fever of London, which appears rarely to assume any other form than that of our author's Adynamic species. But it will not comprehend all the varieties remarked in the epidemics of Edinburgh; neither will it include all the varieties described by the latest and most esteemed authors. Pinel admits as the basis of his classification of fevers an Inflammatory form, the symptoms of which are almost precisely the same with those of Dr Burne's Ephemera, but which lasts one, two, four, seven, eleven, or fourteen days, and which in the more violent cases is accompanied with obtuse gravative headach and delirium. * In most particulars his description agrees very closely with a variety we have often witnessed in Edinburgh.

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* Nosographie Philosophique, i. 35. Edition Geme.

This variety commences always suddenly. The pulse is incompressible, generally very frequent, often above 120 or 130, sometimes full and hard, more commonly small and wiry; the skin is pungently hot and red; *the blood flows with force from a vein, is more florid than healthy venous blood, coagulates firmly, in general with a thick buffy coat, rarely, however, cupped;* the senses, with the exception of that of smell, are preternaturally acute, and delirium is common; the system bears copious blood-letting almost as well as in cases of idiopathic pneumonia or pleurisy, and the disease is either arrested, or shortened, or mitigated by it; the fever commonly ends abruptly on the fourth, fifth, sixth, seventh, or eighth day, or in rarer cases subsides slowly after the eleventh or fourteenth; and in the instances which end abruptly on an early day, it is exceedingly common, if not almost invariable, for a relapse to ensue suddenly on the eleventh, twelfth, or fourteenth; which relapse in its turn ceases abruptly in the course of one, three, or five days more. We have described this form in terms which establish the most pointed contrast between it and our author's description of his Simple Adynamic fever. It may be at times seen even in the present epidemic, with its distinct inflammatory character, and also without any symptom which a rational nosologist could refer to local inflammation. But it has been much less common in the present epidemic than in the epidemic of 1817–20, during which period the inflammatory constitution was also more prominent than now in every variety of fever.

No practitioner who was at that time extensively concerned in the treatment of fever could fail to meet with instances of Pure Inflammatory fever, or *Synocha.* Nevertheless, it is well known that such cases were much more generally attended with local inflammations; which, however, upon the grounds ably chosen by Dr Burne when he proves the primary or essential nature of his adynamic fever, we shall afterwards show, to the satisfaction of every unbiassed mind, were accidental merely. In the epidemic of 1817–20 the cases of simple and complicated inflammatory fever, which answered the description now given, amounted to about a sixth or even a fifth of the whole. And it is worthy of remark, that of such cases a much larger proportion was referrible to contagion than of those which corresponded with our author's adynamic form: we might indeed almost venture to say that every case of inflammatory continued fever, with or without local inflammation, could be easily connected with exposure to an infected atmosphere.

This form of fever we have remarked was much less generally pure than complicated with local inflammations. These local inflammations, however, were in some respects similarly modified as when they were united with Dr Burne's adynamic type of fever. They were much more under the influence of remedies than the idiopathic Phlegmasiæ; they rarely left distinct signs of their presence in the dead body; and during convalescence the affected organs in general returned to their healthy condition with rapidity, and without any organic alteration of structure.

A variety of fever almost precisely similar to what we have now described, occurred in various other cities during the progress of the epidemic of 1817–20 throughout the kingdom, as Dr Burne may satisfy himself by consulting the many valuable documents which appeared during that period. It evidently, too, continues still to show itself in various quarters, Dr O'Brien having described in the last Dublin Hospital Reports a variety which greatly resembles the one in question. But we believe it has nowhere prevailed so much, or with the *sthenic* or inflammatory type so distinct and violent, as at Edinburgh.

It is quite clear, therefore, not only that two forms of continued fever are necessary in a nosological arrangement, as Dr Burne has admitted, but likewise that his first or Inflammatory species must be allowed a much more important place than our author is disposed to assign.

In various parts of his work Dr Burne has attacked with much ingenuity and force the prevailing doctrines of some foreign schools of physic, regarding the Local Nature and Origin of fever. It is hardly necessary to remind the reader, that by many pathologists in France and elsewhere, the existence of essential or primitive fevers has been called in question, and all forms of continued fever imputed to local inflammation, which by some is supposed to have its seat in the brain or its membranes, but by most physicians of this particular sect is believed to reside in the gastro-intestinal mucous membrane. We have never thought it worth while to notice these doctrines in a regular or detailed review, because we have always thought that the experience of every practical man in this country must provide him with obvious and satisfactory arguments against their stability and truth; while the improvements which these doctrines inculcate in the treatment of such fevers, and which will remain after the speculations that introduced them shall be forgotten, have been long familiar to the British practitioner. We have reason to know, however, that the principles of Broussais have been gaining more adherents of late among our countrymen than formerly, and to such the views and experience of Dr Burne may supply some valuable information.

Confining himself of course to the Adynamic fever in the sense already mentioned, he first notices the doctrine which imputes the fever to inflammation of the brain or its membranes. And here he proves, *first*, that a severe adynamic fever may exist from beginning to end without any affection of the head, even sometimes without headach;—*secondly*, that the degree of fever is by no means proportioned to the degree of the cerebral derangement, as might be expected if the fever was symptomatic merely;—*thirdly*, that the constitutional disorder almost invariably precedes the affection of the head, and very often for several days;—*fourthly*, that in cases of death during the height of the fever anatomy cannot detect any unequivocal sign of cerebral inflammation;—*lastly*, that the local disorder will often subside and the fever nevertheless go on for weeks unaltered, while on the contrary the cessation of the fever almost always puts an immediate end to the local disorder,—a concurrence of circumstances which is never observed in the case of the idiopathic Phlegmasiæ. He then passes to the doctrine, that inflammation or irritation of the gastro-intestinal mucous membrane is the cause of fevers supposed to be essential; and after calling the attention of his reader for an instant to the incompatibility of the two anti-essential theories, he proceeds to demolish the doctrines of Broussais with precisely the same weapons with which he overturned those of Dr Clutterbuck. He afterwards shows that the same arguments apply with equal force to the opinion of those who do not single out inflammation of any special organ as the cause, but still holding that the cause is local inflammation, allow it to occupy any organ in the body. Against this and all parallel theories he maintains it is an insuperable objection, that, while active organic inflammation very generally produces a lesion of the organ inflamed, and in consequence a permanent or slowly-ceasing imperfection in its functions, such organic lesion or imperfection is rarely the product of adynamic fever.

All of these facts and arguments might be drawn with equal or even greater effect from cases of Inflammatory fever. In that form may be seen symptoms of the most acute bronchitis, pleuritis, gastritis, or peritonitis developed after several days of violent pyrexia, removed quickly and entirely by appropriate treatment, and not returning although the pyrexia continues some days longer with unabated force. Or a pure state of inflammatory pyrexia may exist for four, five, or seven days and upwards, without any local affection whatever from beginning to end. In this species of fever too the accidental nature of the local disorders which often occur is clearly pointed out by the circumstances under which the fever preserves its primitive or acquires a complicated form. In the poorer classes and in the severe or irregular weather which prevails in this city for nine months of the year a case of *pure* inflammatory fever has been rarely witnessed. In the latter months of summer and in the early part of autumn a few cases of the kind have been observed even among the poor: In the better ranks on the contrary, and above all among the medical students, dressers, and resident hospital assistants, the fever assumes the pure form in a great proportion, perhaps in a majority of instances at all seasons. But in particular it has been invariably remarked that among all ranks of patients and in all seasons pure fever is far more common during relapses than during the primary attack. A patient from an infected district of the city is brought to the hospital labouring under acute inflammatory fever, complicated with acute pneumonia or gastritis; the local disorder is immediately removed by copious depletion or other remedies; the fever goes on for a day or two longer; on the fifth, sixth, or seventh day, a critical sweat puts an end abruptly to all his complaints; on the fourteenth day he is attacked with rigors, succeeded by pyrexia, perhaps even more acute than before, and terminating in a critical sweat on the seventeenth: Yet in this relapse not a vestige can be traced of the local inflammation which was the prominent symptom at his admission; and in every other respect the disease is a pure unmixed fever. Such is a brief narrative, which would embrace a very great number of the cases of Inflammatory continued fever as it appears in Edinburgh. The contrary description will indeed apply in some instances; but the latter are out of all proportion more rare than the former. In the face of such facts it is quite preposterous to suppose that the fever can be the secondary and the local inflammation the primary disorder.

As to the real Nature, or Proximate Cause of Adynamic fever, our author maintains that the disease has no local seat, and thinks there is every reason for believing that its essential symptoms originate in a morbid state of the blood. His observations on the state of the blood have been already noticed: It is characterized in his opinion by unusual darkness, and an inferior tendency to coagulate, and is produced by the respiration of a contaminated or poisoned atmosphere. Dr Clanny, as we have observed in our last number, believes that it is deficient in all its solid ingredients, and likewise in its usual proportion of carbonic acid, (p. 221.) But whatever be the morbid state, it is inadequate to maintain the healthy state of the various organs which it supplies, and whose functions consequently become deranged. The first which thus suffers, and sometimes almost the only organ whose functions are materially disordered, is the brain, with its collateral ramifications and dependencies; and the universal consequence is the *adynamic* state of the body, as manifested by every organ whose operations are under the immediate influence of the nervous system. Sometimes the morbid condition of the blood is sufficient in degree to occasion this adynamic state of itself; more generally it excites only a predisposition which is called forth by some concurring accidental cause such as cold, or mental emotion: and whenever the fever is excited in the former way, the adynamic state induced is always greatest, and the danger from that state the most urgent. Consequently the derangement of the functions of the nervous system is of primary importance, that of the sanguiferous system being secondary and rising into importance only when accompanied with local inflammation.

In the foregoing exposition our author appears again to lose sight of the inflammatory variety of continued fever, which obviously arises in almost the same circumstances as the adynamic form, but which is certainly not characterized by the same changes in the state of the blood. The blood both possesses a brighter colour than in health, and coagulates at least as strongly. But it is needless to follow Dr Burne through the mazes of theory, while there is no prospect of reaching certainty in the end, and while so much remains for us to consider that is more practical in its bearings.

We shall now take a short view of Dr Burne's opinions as to the Treatment of Adynamic fever. His remarks on this head are in general judicious and apparently the result of much and minute clinical observation. He first treats in a general way of the remedies in common use, and then considers some special points in the treatment of particular symptoms.

He seems to have but a low opinion of the value of *Emetics* even at the beginning of the disease; and to think the only useful object to be attained by them is the clearing of the stomach of undigested aliment. *Aperients* are of course accounted essential; but he prefers the mildest, has a decided preference for rhubarb, depreciates the merits of senna and castor oil, objects positively to the whole class of neutral salts, and will not so much as speak of aloes, scammony, and such other active purgatives. These prohibited articles are believed by him to be apt to induce diarrhœa after their effect in cleansing the canal is over, in other words, to bring on intestinal inflammation. In the *asthenic* or *adynamic* form of the fever of this city, where intestinal inflammation appears to be greatly less frequent than in London, we have rarely been able to remark the tendency thus imputed; so that we apprehend the caution he has given against saline or other active laxatives is to be taken, like some other particulars of his method of cure, in a relative sense only.—*Bark*, he thinks, has been of late too generally prescribed, and will be often found useful in the decline of the fever, or when it tends to be remittent, or during convalescence when it is stationary and the digestive functions languish. He even maintains that it may be advantageously given to arrest the formation of adynamic fever, nay, avers that it is not less serviceable for this purpose than for checking an ague,—a statement of which we doubt very much the accuracy.—With the *Cold Affusion* he has succeeded like others in checking fever in its early stage, and mitigating delirium at a later period.—*Ventilation* is considered by him of the greatest consequence; but in the course of his previous remarks on the symptoms of adynamic fever he has mentioned various facts, which appear to us to illustrate well what has been said in a recent number of this Journal by Dr Alison (xxviii. 250,) as to the inconvenience and danger of carrying the system of ventilation too far with patients of the lower orders. Removal to an hospital will doubtless in general act as a tonic, and moderate or prevent the increase of the adynamic state in such patients; but when the ventilation of the wards is not managed with discretion, the patients are very apt to be attacked with local inflammation, both during the course of the fever and during convalescence.—Dr Burne attaches more importance to *Febrifuge* or *Diaphoretic* remedies than they have appeared to us to merit, at least in the fever of Edinburgh. Many of our hospital practitioners employ them regularly; but, so far as we have seen, to very little purpose.

On the subject of *Blood-letting* Dr Burne's opinions, we do not hesitate to say, are unexceptionable, and some of his cautions are certainly called for. Copious depletion in fever may be a necessary, useful, and safe remedy, in the form which has been described above under the denomination of inflammatory fever, whether simple or complicated. But we must admit that some practitioners, both here and at a distance, thinking, but erroneously, that they were imitating the practice of our hospital physicians, have extended the system of free depletion too indiscriminately to all forms of fever, and have brought the remedy into disrepute with other impartial observers besides our author, by attempting to apply it, in its original vigour, to cases in which the type of the disease was asthenic, not inflammatory. Even in such cases, as Dr Burne admits and enforces, moderate blood-letting may be used with effect to remove local inflammation, to keep down inordinate and unusual action in the sanguiferous system, nay, even to shorten the disease. But it should not be pushed far or often repeated for any of these purposes, when the asthenic type is well marked. If the disease has been developed spontaneously and slowly, it should be used with still greater discretion; and the amount of blood drawn should be regulated in all cases, not by any abstract principle of the necessity of free depletion, but by the state of the pulse before and during the operation. Our experience here agrees entirely with that of Dr Burne in London, that in well marked asthenic cases, at an advanced period of the disease, all the advantage to be derived from blood-letting is to be procured with equal, if not even greater certainty, from topical bleeding or blisters. But on the contrary, it may be right on our part to add a caution to Dr Burne himself, not to condemn copious depletion in fevers too indiscriminately, but to look to the form of fever which is to be treated; and above all, to remember his own advice to follow the pulse as a guide, and—when he meets with (what he seems seldom or never to have seen hitherto) an inflammatory fever with a frequent wiry pulse,—not to be too easily deterred from free blood-letting by a state of extreme prostration of strength, which, it may be remarked, is often observed in the cases in question to a degree hardly surpassed by the muscular debility of his adynamic form of fever.

On the employment of *Mercury* in adynamic fever, his opinions are somewhat peculiar. He thinks its internal administration ought to be proscribed, as it tends to excite that irritation of the intestinal mucous membrane, which would appear to be the chief object of fear at present among London physicians. He even objects to the use of the mildest compounds, such as the *hydrargyrum cum creta;* and in reference to the therapeutic virtues ascribed to this remedy by Dr Bright in cases of exhausting ochrey diarrhœa, as already related in the present number of this Journal (p. 379), Dr Burne distinctly says he has " generally seen the diarrhœa subside sooner when mercurials have not been resorted to;" and has " repeatedly seen it aggravated and protracted by the *hydrargyrum cum creta,* to the manifest injury of the patient." Nevertheless, for some other special purposes, mercurialism brought on by external frictions he has found to be not only harmless, but singularly beneficial.

> " I believe," continues he, " it may be advantageously employed in all urgent cases of the adynamic fever, and particularly when the brain is much affected; as, where there is oppression or lethargy from fulness of blood about the head; where there is restlessness and noisy delirium; or, where inflammatory action is going on; and indeed in all cases, and at all times, when the return of the secretions is obstinately protracted."

"It has quite astonished me on some occasions to see how quickly the tongue will cast off its dry brown or black thick coating, the lips and teeth become moist, and the skin soft, and the brain resume its natural functions. Mercurial friction has produced more rapid and favourable changes in very severe cases of the adynamic fever, than any other remedy I have ever seen administered. The average quantity to be rubbed in is half a drachm of the *ungentum hydrargyri fortius* twice a-day."—p. 192.

We can add our testimony to the truth of some of these observations, having witnessed results not less striking in circumstances apparently very desperate; but for the reasons mentioned above, we have not been accustomed to fear the *internal* use of mercury in the fever of Edinburgh, and have never used it in the way of friction.

The author's subsequent commentaries on the employment of opium and hyoscyamus, and of stimulants, on the proper regimen, and on the mode of combating the numerous accidental disorders which spring up during fever, we must pass over in silence, as it is hardly possible to give an abridged statement of them. But we may confidently recommend them to the reader's notice and adoption, provided always that he keep clearly before him the form of disease to which alone Dr Burne's observations were intended to apply. His remarks on retention of urine, its signs, its effects, and its treatment, are peculiarly deserving of notice.

ART. VI.—1. *Traité d'Anatomie Chirurgicale, ou Anatomie des Regions, considerée dans ses Rapports avec la Chirurgie; ouvrage orné de quatorze planches, &c.* Par A. L. M. VELPEAU, D. M. P. &c. Deux Tomes 8vo. Paris, 1825—1826.

2. *Traité d'Anatomie Topographique, ou Anatomie des Regions du Corps Humain, considerée specialement dans ses Rapports avec la Chirurgie et la Medecine Operatoire.* Par PH. FRED. BLANDIN, Prof. Part. d'Anatomie, &c. Paris, 1826. 8vo. Pp. 690. 12 Lithographic Plates the size of life.

3. *A Manual of Surgical Anatomy, containing a minute description of the parts concerned in Operative Surgery, with the Anatomical effects of Accidents, and Instructions for the Performance of Operations.* By H. M. EDWARDS, D. M. P. Translated, with Notes, by WILLIAM COULSON, Demonstrator of Anatomy at the Medical School, Aldersgate Street, &c. London, 1828.

THOUGH the principal object of anatomical study is to qualify the practitioner to understand the principle and excel in the performance of surgical operations, and may therefore be justly termed *Surgical Anatomy*, under this epithet is included all that intimate knowledge of the relations of parts which enables the surgeon to conduct with success the management of diseases, whether they require manual operation or the exercise of that more profound knowledge which relies on the living properties of the organic textures, and on the powers of the constitution for effecting the object in view, and is aware that operation is either unnecessary or injurious.

According to this view of surgical anatomy, it is not easy to say what was the first treatise on the subject. On the one hand, the majority of anatomical writers, ancient and modern, have pointed out the application of anatomical facts to the management of local diseases and the performance of operations. Of this the summary in the exposition of Winslow is a very good example. On the other hand, in no professed anatomical treatise does the surgeon find that precise and particular description of the mutual relations of parts, which is indispensable to guide his instrument, and absolutely necessary to insure confidence. This state of matters compels the surgeon to seek the exact kind of information which he wants from the same source from which the anatomist obtains what answers his views.

It may be supposed that the particular species of anatomical knowledge thus wanted would be very early sought,—that its necessity would be felt as soon as surgery began to assume the shape of a scientific art, regulated by fixed principles,—and that the success with which local diseases were treated or removed by operation, would depend entirely on the diligence with which surgeons cultivated the anatomy of relation. In all the refined and scientific parts of the art of surgery this has been remarkably exemplified; and one reason of the slow progress of the art till late years has been the little attention which was paid to that species of anatomical knowledge, on which its very existence depends. Lithotomy was one of the first subjects which was destined to be illustrated by the exact knowledge of the relations of parts; and it is unnecessary in this place to say how much the profound and accurate knowledge of Cheselden tended to facilitate that operation, and to smooth the path for subsequent surgeons both in this country and on the Continent. It is only within the last twenty or twenty-five years that the pathology and treatment of hernia and aneurism has been reduced to fixed rational principles; and rather less than that period that surgeons have attempted to disarticulate the humerus and thighbone. The arduous operations on the parotid, the lower jaw, and in the vicinity of the carotid artery, are an acquisition still more recently made by surgery from anatomy.

It is indeed a historical fact, that Palfin, a surgeon and teacher of some note at Ghent about a century ago, was the first who wrote a work on anatomy professedly for the use of the surgeon. The merits of this performance, which first appeared in the Flemish language at Leyden in 1718, and was afterwards published in French at Paris in 1726, consists rather in its priority than in any new light which it shed on the surgical art.[*] Instead of being what its title would lead the reader to suppose,—a work showing the application of anatomical knowledge to surgery,—it is merely a very ordinary compilation of anatomy from the usual sources, without anything original, without even any attempt to connect the knowledge of position and relation with that of local disease or its remedies, and with a few occasional remarks on the most common operations. Indifferent, however, as was the work of Palfin, obscure and imperfect in its descriptions, meagre and inexact in its details, and incomplete both in design and execution, it was long, we are informed, the chief manual of the surgeon in a nation famed for practical surgeons; and it was deemed worthy of being republished by Antony Petit in 1753, and afterwards in 1789, with some comments and additional matter. Notwithstanding the changes made in these editions, however, it was not materially improved; and could not with any shadow of justice be termed a system of surgical anatomy. In short, neither Palfin nor his commentator had any distinct or accurate conception of the nature or essential qualities of the work which they undertook.

At a long and distant interval after Palfin, the first author deserving commemoration in this department is Malacarne, who published in 1794 at Venice, and 1801 and 2 at Padua, essays on the traumatic or surgical anatomy of the head, trunk, and neck, and the extremities.[*] It is doubtless to be ascribed to the barbarous seclusion to which every European country was condemned during the long season of warfare preceding and following this period, that these essays, though from the pen of one of the most eminent anatomists of Italy, have been consigned to a long oblivion, and are almost unknown at the present moment in France and England. Though short and cursory, as incipient treatises invariably are, they exhibit a very good view of the state of knowledge at the time, and were well calculated for the instruction of the young surgeons of the sea and land service, for whose use they were composed.

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[*] Anatomie Chirurgicale, ou Description Exacte des Parties du Corps Humain, avec des Remarques Utiles aux Chirurgiens dans la Pratique de leur art. Publiée ci-devant par M. J. Palfin, Chirurgien Juré, Anatomiste et Lecteur en Chirurgie à Gord. Nouvelle Edition. Par A. Petit, Doct. Reg. Tome ii. A Paris, 1753.

[*] Ricordi d'Anatomia Traumatica Pubblicati ad uso de' Giovani Chirurgi Militari di Terra et di Marina Da Vincenzo Malacarne Salluzzese, Chirurgo Pensionario, &c. In Venezia, 1794.

But though the labours of this learned Italian were unknown in France and England, the study of the anatomy of regions was not suffered to languish. In the descriptive anatomy of Bichat the reader finds the first attempt at that precision of description which is the very basis of surgical anatomy; and had not the existence of the author been suddenly terminated in the middle of his work, little doubt can be entertained, that he would have made it one of the most perfect systems of surgical anatomy yet extant. Meanwhile, Mr John Bell was the next author who attempted to collect several of those anatomical facts, the knowledge of which is particularly useful to the surgeon. Throughout his work on the Principles of Surgery, but especially on the subjects of aneurism and lithotomy, much useful anatomical information is occasionally brought forward to explain the theory and fix the practice of the art.

Much about the same time, Scarpa in Italy and Sir Astley Cooper in this country, by the accurate and elaborate manner in which they investigated the structure of the parts concerned in the formation of hernia, showed how much surgical pathology and practice is dependent on anatomy, and threw a light entirely new on the relation between these two arts. The work of the former author on aneurism, in which he explained the influence of relative situation and mutual communication in the arterial system, had a similar tendency. The importance of anatomy, as immediately applicable to the improvement of surgery, was now beginning to be understood. Historical justice, at the same time, requires us to assign to another individual in this country very great merit in cultivating and improving the same department of anatomical knowledge. The chirurgical lectures delivered by Dr Thomson of this place at the College of Surgeons were remarkable for containing at an early period the most extensive collection of accurate information on surgical anatomy, —the result of the labours not only of contemporary authors, but of much personal research and dissection. The lectures of Dr Colles, relating chiefly to the parts concerned in hernia and the operation of lithotomy, and the volume of Allan Burns on the anatomical relations of the neck, were, nevertheless, the first British publications professedly devoted to the exposition of those anatomical facts, the knowledge of which is indispensable to the accomplished surgeon. Of these works, however, neither was complete. One was the commencement only of a treatise on surgical anatomy; the other was confined to the elucidation of the anatomy of one region only.

The example set by these writers was speedily followed by others, who were numerous as the subjects of investigation were important or difficult. On the subjects of hernia and aneurism especially many works have appeared by different authors. On the former the treatises of Laurence, of Hesselbach, of Langenbeck, and of Breschet, are conspicuous. On the latter the work of Hodgson has exhausted every thing almost ascertained on the subject, either anatomical or pathological; while Mr Harrison has been usefully employed in giving more precision to the knowledge of the situation and direction of the arteries. Lithotomy also and the perinæum has had its cultivators; and the treatises of Mr Sleigh, Mr A. Key, and Dr Monro, are indications of the importance attached to this department of chirurgical anatomy.

The utility of this species of anatomical knowledge has been thus satisfactorily demonstrated. It is a subject, indeed, for which, when a taste was once created, its value was likely to be soon recognized. The information thus acquired, however, by many separate hands, it was requisite to collect and embody in a single work, a task which could not be said yet to be effected, even in the excellent system of M. Boyer, published in 1815, and certainly not perfectly in the useful manuals of Shaw, Stanley, and Green, much less in that of M. Marjolin. *

It is singular, indeed, that the English surgeons, who have laboured with such assiduity and success in many of the departments of this field, have allowed the ultimate completion of the task to be effected by foreign skill and industry. The first distinct effort of the kind was that by Rosenthal, professor at Berlin, who in 1817 published a manual of chirurgical anatomy, which indeed is very incomplete, and is not entitled to any commendation beyond that of dividing the human body into separate regions, and describing shortly the parts and organs belonging to each.† The next attempts, which were rather more successful, are now to be brought under notice. Nearly at the same time, at least within a year of each other, three treatises on local or relative anatomy issued from the French press. Of the three authors, whose works are now before us, it is not easy to say which is entitled to priority. By two of them, M. Blandin and M. Velpeau, the claim is evidently contested. The first volume of the work of M. Velpeau, dated in 1825, appeared in November of that year; while the second is dated like

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* Manuel d'Anatomie Descriptive, par J. N. Marjolin. Paris, 1815.

† Handbuch der Chirurgischen Anatomie. Berlin, 1817.

the volume of M. Blandin, 1826, which further appears to have been published subsequently to the first volume of M. Velpeau. The manual of M. H. M. Edwards seems to have been projected, and actually in preparation when that of M. Velpeau made its appearance. The merit of priority, therefore, lies between M. Velpeau and M. Blandin. In all other respects, the decision of this point is of so little moment, that we willingly quit it, to speak of the respective merits of the three works.

When at the same period several treatises appear on the same subject, it may be regarded as a fair indication of the attention with which that subject is cultivated; and in general the merit of works appearing under such circumstances will be much greater than if no competition of this kind existed. The justice of this observation is strongly evinced in the three works now under consideration. They are so well executed, each has so many good qualities, that it is difficult to say which has the advantage of the other, or to what extent any one is absolutely and positively the best. The work of M. Velpeau is manifestly the most extensive and the most elaborate, the fullest in description, and the most minute in detail. Of that of M. Blandin, the principal quality seems to be the clearness of its arrangement, the succinctness of its expositions, and the summary brevity of its general manner. The manual of M. H. M. Edwards is distinguished for containing in a small compass a large proportion of most useful information.

In all the three works, the same general principle of arrangement is observed. The entire body is divided into a certain number of regions, bounded by certain fixed outlines and limits. After defining these boundaries, the component parts of each region are described as they are presented to the knife of the dissector or operator, proceeding from the skin to the deep-seated textures. The peculiarities of the skin and of the cellular membrane in each region are first noticed. The arrangement and distribution of the aponeurotic fascia are then described. The situation and direction of the muscles, the course of the blood-vessels, the situation of the lymphatics, the direction of the nervous trunks and branches, and lastly, the bones, or those portions of the skeleton which give support or protection to the surrounding soft parts. In the case of the cavities containing the organs essential to the vital functions, the textures forming the *parietes* or enclosing parts are first described; and the relative situation and shape of the organs are then briefly sketched. Under each head are such remarks, pathological and practical, and such observations on operations and the mode of performing them, as the region under description may suggest.

Notwithstanding this general resemblance, however, we find in each work the individual parts of the arrangement finished in a peculiar manner.

M. Velpeau divides the whole body into seven great divisions; 1*st*, the head; 2*d*, the neck; 3*d*, the thoracic members, or upper extremities; 4*th*, the chest and its contents; 5*th*, the abdomen; 6*th*, the pelvis; and 7*th*, the pelvic members or the inferior extremities; and to the surgical anatomy of each of these divisions he allots a separate chapter. Each of these great divisions is resolved into subdivisions, which again consist of certain regions, the local anatomy of each of which is treated in an equal number of sections. The most expeditious method of giving a perspicuous idea of this arrangement will be the following tabular sketch:—

		Regions.	
The head.	The skull.	Frontal region.	
		Temporal region.	
		Occipital region.	
	The face.	Parotid region.	
		Nasal region.	
		Orbitar region.	
		Zygomato-maxillary region.	
		Masseterine region.	
		Genial region.	
		Mental region.	
		Labial region.	upper. lower.
		Olfacient region.	
		Buccal region or cavity.	
		Pharyngeal region or cavity.	
The neck.	Anterior part of the neck.	Supra-hyoid region.	
		Infra-hyoid region.	
		Supra-clavicular region.	
	Posterior part of the neck.		
The thoracic members, or upper extremities.	The shoulder.	Infra-clavicular or axillary region.	
		Scapular region.	
	The arm.	Anterior brachial region.	
		Posterior brachial region.	
	The elbow.	Bend of the arm.	
		Elbow.	
	The fore-arm.	Palmar region.	
		Posterior antebrachial region.	
		Margins of the fore-arm.	
	The thumb.	Anterior region.	
		Dorsal or posterior region.	
	The hand.	Palmar region.	
		Dorsal region.	
	The fingers.	Palmar region.	
		Dorsal surface.	
The chest.	The thorax.	Sternal region.	
		Dorsal or vertebral region.	
		Costal region.	
		Mammary region.	
	Interior of the thorax	Median septum or mediastinum.	
		Pectoral cavities.	
		Base of the thorax.	
		Apex of the thorax.	

The abdomen.	Thoraco-epigastric zone.	Epigastric region.
		Hypochondriac region.
	Meso-gastric zone.	Umbilical region.
		The flanks.
		Lumbar region.
	Hypogastric zone.	Hypogastric region.
		Iliac regions.
	The abdominal cavity.	Superior wall.
		Anterior wall.
		Lateral wall.
		Posterior wall.
		Iliac fossa.
		Viscera.
	The pelvis.	Pubic or anterior region.
		Ano-perineal region.
		Pelvic region.
		Perineal region in the female.
		Pelvic in the female.
		Sacro-coccygeal region.
		Gluteal region.
		Inguinal region.
The pelvic members, or lower extremities.	The thigh.	Anterior femoral region.
		Posterior femoral region.
	The knee.	Anterior region or knee proper.
		The ham.
	The leg.	Anterior external region.
		Posterior region.
		Internal or tibial region.
	The malleoli.	Internal ankle.
		External ankle.
		Anterior inter-malleolar region.
		Posterior inter-malleolar region.
	The foot.	Dorsal or superior region.
		Plantar or inferior.
		The toes.

The anatomy of each of these regions is fully and minutely described in the sections into which each article of the respective chapters is divided. The subdivision is certainly minute to an extreme, and the boundaries within which the regions are circumscribed are doubtless much more arbitrary than natural. Notwithstanding these objections, however, it is well adapted for communicating a minute and accurate view of the mutual anatomical relations of each region.

The divisions of M. Blandin, though constructed upon the same principles, are perhaps less numerous and complex in appearance, and, so far as it is possible to judge, less arbitrary and more natural. Viewing the human body as composed of trunk and members, he divides the former into a middle or central portion, and extremities at each end of the vertebral column. The cerebral extremity, or the head, is of course the most important, and this, after being divided into skull and face, is subdivided into regions. The central portion of the trunk he refers to three parts, the neck, chest, and belly, including under the latter the pelvis; and each of these large divisions are then distinguished into convenient regions. In a similar manner the members, thoracic and abdominal, are distinguished into regions.

Of the merits of this method the reader may judge from the following table :—

					Regions.
The Human Body consists of	TRUNK.		Cerebral extremity. The head.	Cerebral portion. Skull or cranium.	Occipito-frontal.
					Temporal.
					Auricular.
					Mastoid.
					Basilar.
					Internal-cranial.
				Sensual portion, or the face.	External-olfacient.
					Internal-olfacient.
					Palato-gingival.
					Glosso-supra-hyoid.
					Labial.
					Mental.
					Palatine.
					Genal.
					Tonsillary.
					External orbitar.
					Ocular.
					Zygomatic.
			Coccygeal extremity.		
		Central portion.	Neck.	Anterior-lateral portion, Τραχηλος.	Glosso-infra-hyoid.
					Parotid.
					Laryngo-tracheal.
					Supra-clavicular.
					Sterno-mastoid.
					Carotic.
				Cervical.	Cervical.
			Chest.	Walls.	Sternal.
					Costal.
					Dorsal.
					Diaphragmatic.
				Cavity.	Mediastinal.
					Pulmonary.
			Abdomen.	Ant. lateral.	Costo-iliac.
				Posterior.	Lumbar.
					Iliac.
					Inguinal.
				Superior.	Diaphragmatic.
				Inferior.	Perineal.
					Intra-pelvic.
					Pubal.
					Testicular.
					Scrotal.
					Sacral.
				Cavity.	Intra-abdominal.
	MEMBERS.		Thoracic extremities.	Shoulder.	Clavicular.
					Scapular.
					Scapulo-humeral.
					Axillary.
				Arm.	Brachial.
					Cubital.
				Fore-arm.	Antibrachial.
					Thumb.
				Hand.	Palmar.
					Digital.
			Abdominal extremities.	Hip.	Gluteal.
				Thigh.	Crural.
					Genual.
				Leg.	Tibial.
					Malleolar and inter-malleolar.
				Foot.	Plantar.
					Digital.

The arrangement of M. Edwards is simpler than either of these. Dividing the whole body into seventeen regions, he treats of the surgical anatomy of each in an equal number of chapters, in the following order:—

1. Superior region of the head.
2. Naso-orbitar region.
3. Maxillary region.
4. Auricular region.
5. Anterior cervical region.
6. Posterior cervical region.
7. Anterior thoracic region.
8. Posterior thoracic region.
9. Scapulo-humeral, or region of the shoulder.
10. Middle region of the arm.
11. Region of the hand.
12. Anterior abdominal region.
13. Lumbar region.
14. Pelvic region.
15. Coxo-femoral region, or the hip.
16. Genu-tibial region.
17. Region of the foot.

This division, it must be acknowledged, is less minute, and bears less appearance of precision than either of the former, and may therefore be inadequate to comprehend accurately every minute spot and point of the body or its appendages. We confess, however, that it pleases us more by its smaller degree of complexity; and we think it equally likely to answer the purpose for which it is intended. If a division is distinct, and its constituent parts well marked, and not made to interfere with each other, it will generally answer the purpose of referring to one or other of its members all the insulated facts of which the subject consists. To this character the division of M. Edwards is entitled; and it may therefore answer the purpose of the student as effectually as the more elaborate and precise ones of MM. Velpeau and Blandin.

On the mode in which the descriptive and didactic parts of these works are executed, it is impossible in this place to enter into any detail; and we shall confine ourselves to a few general remarks only. Each author has his peculiar manner, and each of these has its peculiar advantages.

M. Velpeau describes in each region the skin, cellular membrane, fascia, muscles, arteries, veins, lymphatics, nerves, and bones, and notices as he proceeds the diseases and injuries incident to each, and the operations in which they are concerned, either partially or generally, exclusively or with other textures.

M. Blandin, again, after defining his region, proceeds to consider its structure, which he does by enumerating and describing, first, its *elements*, that is, the textures of which it consists, from the skin inwards; and, secondly, its *relations*, or the exact situation of its constituent parts in relation to each other. This is followed by a short sketch of its developement, its uses, and the varieties which occur in structure, disposition, or number of textures and organs. The whole is then concluded with pathological and operatory inferences, which form an account of the wounds, injuries, and diseases incident to the region, the operations which are performed on it, and the merits of the different modes of operating. This mode of treating the pathological and surgical department of the subject is more convenient to the surgeon, who perceives thus at a single glance the whole of the morbid states and operations pertaining to any region, and is thus enabled, by the preliminary anatomical description, readily to obtain a distinct conception of its surgical relations.

The method of M. Edwards is something intermediate between those of M. Velpeau and M. Blandin. After tracing the boundaries of the region to be described, he proceeds as the others to consider shortly the peculiarities of the skin, cellular tissue, and fascia; and without attempting to arrange muscles with muscles, or blood-vessels with blood-vessels, he notices the situation, shape, and relations of each muscle, artery, vein, and nerve, as it presents itself. Under each of these individual anatomical elements he notices, as he proceeds, all the minor diseases and operations, with occasional pathological remarks. The capital operations he introduces more at length immediately after the description of the relations of the part or parts concerned. Whether it be that this mode of procedure is better calculated for the object in view, or is effected in a more ingenious and dexterous manner by M. Edwards, we feel it difficult to determine. We feel, upon the whole, however, on perusing his work, that it is better suited for beginners and students than either of the two others. It is no doubt less elaborate; its details are less complete; and it is altogether a less finished work. But in compensation it exhibits, in an easy and unassuming style, a pretty complete view of the most essential and important parts of surgical anatomy.

That the reader may form some idea of the comparative merits of these different modes, we shall add from each another extract, pertaining exclusively to surgical anatomy.

From M. Velpeau the specimen shall be the anatomical relations of the subclavian artery, necessary to the exposition and ligature of that vessel.

> "The mere statement of the anatomical relations of the right subclavian artery within the *scaleni* is sufficient to demonstrate the danger and the difficulties of tying it at that point."
>
> "To perform this operation, indeed, it is requisite to divide the internal portion of the sterno-mastoid, often also the two fleshy slips placed behind, *i. e.* the sterno-hyoid and sterno-thyroid; then to avoid before the vessel, the vertebral arteries, the inferior thyroids, the internal mammaries, the pneumo-gastric and phrenic nerves, &c.; and behind, the recurrent, the great sympathetic, and the superior intercostal artery."
>
> "The only method of saving with certainty all these parts, ex-

cepting the muscles, consists in dividing dexterously the sheath of the vessel to be tied, when all the nerves which creep in the sheath will thus be isolated. Another obstacle to the success of the ligature would be found in the origin of the inferior thyroid, vertebral, and internal mammary arteries, which would oppose the formation of the clot, if the ligature were applied between these arteries and the *scalenus*. The danger would not be diminished by applying the ligature so as to exclude these branches; for then the proximity of the *innominata* and the common carotid would render the obliteration of the origin of the subclavian difficult, without exposing the patient to perish by hemorrhagy."

"On the left side the first portion of the subclavian is longer, deeper, and less thick. It descends almost perpendicularly on the arch of the aorta; the subclavian vein crosses it proceeding to the right; the *nervus vagus* and phrenic are rather inside than before; the thoracic duct crosses it also sometimes behind and above, occasionally before and below; and within, it is bounded by the carotid and the left cardiac nerves, and continues without longer in contact with the pleura and the lungs than on the right side."

"All these differences are important, and show that the ligature would be much less dangerous than on the right, considering that at a greater distance from the origin of the vessel the adhesive clot would be formed without difficulty. The operation would also be less difficult, since the nerves do not cross it as on the right, but descend in a parallel direction to the chest, and may be readily separated. It must be admitted, nevertheless, that the greater depth, and the nearly vertical direction of the artery, counterpoise almost the whole of these advantages."

"As the two other portions of the subclavian artery are perfectly alike on both sides, what we say of one is applicable to both."

"Between the *scaleni*, it is lodged immediately on the depression of the first rib below; upon the end of the *scalenus posticus* behind; before it is not quite so near the *scalenus anticus*, which is farther inwards than the *posticus*, in consequence of the curvature of the rib; above, and a little behind, is seen the union of the first dorsal with the seventh cervical nerve; and the vessel is further enveloped in thick dense fibro-cellular plates. At this point it may be compressed so as to arrest the current of blood in two different modes; 1*st*, by pressing from above downwards upon the first rib, which is better done by the thumb than by any other mechanical instrument; or 2*dly*, from before backwards on the anterior surface of the *scalenus posticus*, and the transverse process of the first dorsal vertebræ. In both cases the compression is facilitated and insured by depressing the shoulder; and though John Bell denies it, the calibre of the artery may in this manner be obliterated. We admit, however, the difficulty of attaining this purpose in cases in which the clavicle and shoulder are powerfully elevated, without the possibility of lowering them.

"That the subclavian artery may thus be seized most easily and certainly, it is requisite, after tearing or dividing the different cellular plates, to follow by the tip of the index finger the external margin of the *scalenus anticus* to its insertion on the first rib, and to seek for the tubercle, which may always be felt. In gliding the finger from this tubercle backwards upon the fore part of the *scalenus posticus*, it passes necessarily over the artery. Nothing is then simpler than to raise the vessel on a grooved probe, taking care to rest the finger upon the point of the artery opposite to that by which the probe is introduced. This method is so certain that it may be done with the eyes shut. But the operator must not forget that the artery is invariably the first cord which is encountered after passing the tubercle of the insertion of the *scalenus anticus* muscle."

From the work of M. Blandin we extract some of the pathological and operatory deductions on the surgical anatomy of the ano-perinæal region in the male.

"In this region is practised in the majority of cases the operation of lithotomy. To examine it anatomically, we recognize with M. Senn three methods only, the *median*, the *oblique*, and the *bilateral*."

"The *median* operation, always necessarily accompanied with lesion of the ejaculator ducts, when it is wholly median, is bad in young subjects. When it is wished to perform this operation without dividing the rectum, the division of the neck of the bladder must be confined to seven lines. If, on the contrary, it is wished to divide the neck of the bladder and the lowest part of the rectum, the operator obtains a large opening, followed almost always by incurable fistulæ. The operation itself, which consists in dividing not only the prostate and the rectum above it, but the recto-vesical septum, as at first proposed by M. Sanson, but since I believe abandoned, would be a rash attempt, condemned at once by surgery and anatomy. Besides the inconveniences already objected to the median operation, it would often terminate fatally by opening the peritonæum, especially in infants, as happened to M. Gery in the only case happily in which it was attempted to open the bladder thus largely. In performing the median operation we divide successively the skin, the cellular tissue of the raphé, the inferior perineal aponeurosis, the extremities of the *bulbo-cavernosi* and sphincter, the raphé of the transverse muscles of the perinæum, the median aponeurosis, the lower part of the bulb of the urethra, its membranous portion, and the prostate below, with the neck of the bladder. The incision divides, then, the *verumontanum*, unless it be cut laterally, as M. Dupuytren proposes, which, however, is liable to injure the ejaculating ducts and the extremity of the *vesicula* ; finally, proceeding beyond the prostate, the incision divides in the fashion of a saw the part of the rectum next the anus, and the sphincter."

"In the oblique or lateralised lithotomy. three periods are distinguished ; 1*st*, the incision of the sub-urethral parts ; 2*d*, the division of the urethra on the staff ; and 3*d*, the division of the neck of the bladder. In the first the operator divides the skin, the cellular membrane, the inferior aponeurosis, some twigs of the superficial perinæal artery, which is passed within without being cut, unless the incision be too lateral, the *bulbo-cavernosus* and *transversus* muscles, the bulb below, the middle aponeurosis, and the membranous part of the urethra. It is requisite to go fourteen lines before the anus to cut the artery of the bulb in the regular manner. Its lesion otherwise is inevitable. The inferior hemorrhoidal arteries cannot be cut unless the incision proceeds behind the ischial tuberosity. In the second stage the urethra alone is divided; and here the rectum cannot be injured, unless when raising too high the handle of the bistoury, its point quits entirely the groove of the staff. In the third stage, the operator divides transversely or obliquely the neck of the bladder, the prostate, and the anterior bundle of the *levator ani*. Not to go beyond the limits of the prostate, the incision ought to be confined to nine or ten lines. Beyond this the prostatic plexus is divided, and infiltration of urine easily takes place. If the incision is too extensive, the rectum may be injured, and even the vesicula of that side may be cut. Lastly, if the division be made transversely and extensively beyond the prostate, it cuts the *superior perineal fascia* applied on the sides of the gland; and consequently infiltration beneath the peritonæum, and other formidable accidents supervene rapidly. It would exceed the limits prescribed by art, to divide the trunk of the perinæal artery placed out of the region, and protected by the bones and fibrous textures. When this misfortune happens, the operator, to arrest the hemorrhage, might tie the artery within the ischial tuberosity, where it is easily discovered, either by seizing it by a curved needle, and enclosing it in a ligature, or by obliterating it by a twisted suture, as Dr Physick of Philadelphia did. Necroscopic inspection almost always shows, that, in the cases in which violent hemorrhage had led to the suspicion that the internal pudic artery was wounded, this vessel was uninjured, and that one of its branches, most frequently the transverse, had been cut. Beclard also performed upon the subject experiments, from which it results, that it is almost impossible to open this artery, even when it is attempted by a large incision. In the general description of the perinæum, we spoke of a variety in which the obturator artery sends a branch to the penis under the symphysis. In this case, the celebrated Shaw thinks that the vessel may be punctured in the lateral operation. This conclusion, however, we must be cautious not to generalize.

" The *bilateral operation*, which is advantageous to obtain a large opening without going beyond the prostatic limits, requires the division of the skin, the cellular tissue, the inferior aponeurosis, the *bulbo-cavernosus, sphincter*, and *transversus*, the middle aponeurosis, the *levator ani*, the lower part of the bulb, the membranous part of the urethra, the neck of the bladder and the prostate, *transversely*, or better by two incisions according to M. Senn, one oblique on the left, the other transverse on the right. It is still necessary to remember in this operation, that the transverse extent of the prostate does not exceed eleven lines. The curved direction given to the exterior incision almost always prevents the injury of the bulbous and superficial perinæal arteries."

The description of this last form of operation is more clearly given by M. Edwards. From this author, however, with the view of varying the subject, we give the description of the mode of operating for exposing and tying the external iliac artery.

"Different plans have been proposed for tying the external iliac artery. Mr Abernethy recommends an incision to be made about four inches in length, commencing about an inch and a half from the anterior superior spinous process of the ilium, and terminating half an inch from the crural arch. In this manner the integuments, fascia, and tendon of the external oblique are to be divided, and the finger is to be introduced below the inferior edge of the internal oblique and transversalis muscles, to protect the peritonæum whilst these muscles are divided. The operator then raises the peritonæum with the fore-finger till he reaches the inner edge of the psoas, and distinctly feels the pulsation of the artery, which is still covered by a layer of cellular tissue, the density of which almost equals that of a fibrous membrane. The vein is situated to the inner edge of the artery, and is intimately connected to it. In general a branch of a nerve accompanies this vessel, and care must be taken not to include it in the ligature. According to Sir Astley Cooper's method, a semilunar incision is to be made through the integuments in the direction of the fibres of the external oblique, extending from near to the anterior superior spinous process of the ilium to a little below the inner side of the inguinal ring. The tendon of the external oblique is divided in this incision, and, on raising the flap, the spermatic cord may be seen passing beneath the edge of the internal oblique and transversalis muscles, and the superior opening of the inguinal canal and the epigastric artery, proceeding along the inner edge of this opening, beneath which the iliac artery is situated. Lastly, by passing the finger beneath the spermatic cord, the iliac vessel may be felt. Bogros has also recommended a plan in which the skin and superficial fascia are to be divided, as in the operation for tying the epigastric artery. The tendon of the external oblique being raised with a director, and divided according to the direction of the crural arch, the operator carries the vessels of the cord and the cremaster beneath the upper lip of the wound, and dilates the opening made in the transversalis fascia. Then following the direction of the epigastric artery with the fore-finger, the layer of cellular membrane and lymphatic ganglia, situated beneath the crural arch, are to be pushed to one side, when the iliac artery will be exposed."—pp. 284–6.

These extracts may serve in some manner to verify the opinion expressed above regarding the three works now competing for the patronage of the operating surgeon. Upon the whole, we think it likely that the manual of M. Edwards will be the student's book; the volume of M. Blandin will be the companion of the anatomist who is anxious to study analytically the parts which his knife divides; while the larger work of M. Velpeau will be studied by the advanced surgeon who is desirous to render his knowledge as extensive as it is precise. One thing is certain, that in either of the three works the surgical student can obtain, at comparatively little labour, much accurate and useful information, to collect which he was formerly obliged to examine many separate works, to make notes of many dissections, and some of which he could obtain nowhere whatever.

We almost had forgot to say that the treatises of M. Velpeau and M. Blandin are accompanied with very excellent lithographic engravings of the anatomical relations of the regions most important to be known; and that the English reader is indebted to Mr Coulson for an able translation of the manual of M. Edwards.

Art. VII.—*Morborum Definitiones Causæque Continentes, &c. &c. Quibus Accedat Toxicologia.* Auctore Ricardo Maddock Hawley, M.D., Collegii Regii Medicorum Edinensis Socio, necnon Soc. Reg. Med. Edin. Socio Extraord. Edinburgi, 1827.

As an attempt to comprehend in a short compass the principal facts of nosology, pathology, and toxicology, this volume deserves the attention of the student. It consists of two parts, —the *first*, an arrangement of diseases and their causes, remote and proximate,—the *second*, an arrangement of poisonous agents, with short accounts of the manner in which they are believed or known to operate.

The selection of a principle of classification has at all times been a difficult task to nosological authors, from Sauvages, Linnæus, Cullen, and Borsieri, to Pinel, Frank, Young, and Mason Good. If the basis of classification be semeiographical, or according to the similitudes and differences of external signs, the close resemblance in many instances of diseases pathologically different forms a serious objection, which not even the genius of Cullen has been able to surmount; and too often sound pathology must be sacrificed to the discriminative arrangement of symptomatic characters. Against the method of classification upon pathological principles, it is too valid an objection that in many diseases the pathological causes are either not determined, or are involved in doubt and ambiguity. The physiological basis of classification has been by many thought the best. But the trial made by the ingenious Dr Mason Good has chiefly served to show the fallacy of this opinion, and the uselessness of the method to practical purposes.

Of these objections the author of the present work was probably well aware. In the general plan of his classification he cannot be said to follow any known authority; and it is only in the subordinate nosological distinctions and generic definitions in which he appears to follow the manner of Cullen. It is probably from a wish to combine the pithy precision of the definitions of this classical model with as much of the correct and improved views of modern pathology as the limits of an elementary work admit, that Dr Hawley has sacrificed uniformity of principle in classification to utility, and has been anxious to provide the student with a useful book, though its arrangement were not exactly according to the strict rules of art.

One of the useful qualities indeed of this work is, that its author discards entirely the usual mode of arranging diseases into classes and orders; and while he necessarily retains the generic distinctions, these he refers to the different regions and organs of the body which the diseases defined are understood to affect.

Dr Hawley begins his definitions after the example of nosologists, with those febrile states which are believed to affect the system at large. These he refers to five subdivisions,—fevers proper, *i. e.* miasmatic and contagious, inflammation, hectic, infantile remittent, and the pyrectic state attending inflammation. After premising this upon the first group, which has no general denomination, the method of arrangement may be exhibited at a single glance in the following table:—

Morbi Generis Nervosi, id est Encephali, Chordæ Spinalis atque Nervorum.
  Oculorum.
  Faucium.
  Pulmonum.
  Cordis et Membranarum.
  quidam Arteriorum et Venarum.
  Œsophagi.
  Ventriculi.
  Peritonæi atque Intestini Tenuioris et Crassioris.
Morbi Jecinoris.
  Instrumentorum Urinæ.
  Gignendi Instrumentorum in Maribus.
  ———————— Mulierum.
  Cutis.
  Telæ reticulatæ.
  Ossium et Ligamentorum.
  Musculorum.
  Glandularum.
  Sedis Incertæ.

Under these, as general heads, are placed the diseases affecting the organs or regions respectively. In this, however, the confusion appears. The arrangement, if it can be referred to any head whatever, may be said to be anatomical; but the distinctions are derived at once from the facts of general and of local anatomy; from the organic characters of the textures, from entire organs, and even from their functional properties. Thus, while the author establishes such divisions as diseases of the nervous system, of the arteries and veins, of the skin, of the cellular web, of the bones and ligaments, of the muscles, and of the glands, he gives also diseases of the lungs, diseases of the heart and its membranes, those of the stomach, of the liver, and finally, diseases of the urinary organs, and of the organs of generation in both sexes.

That this method is at variance with the principle of unity so much required in all classification is an objection of some moment to the merit of the present work. It is, however, no trifling compensation, that it constitutes almost the only objection; and we mention it, that the proper allowance being made, it may not lead to any mistake. In all other respects, the work is very ably drawn up, and demonstrates to the public, what was well known to his pupils, the remarkable talent which Dr Hawley possesses for accuracy of distinction, precision in definition, and neatness and perspicuity in expression.

Under each head Dr Hawley introduces the nosological distinctions established by the most competent authorities; and by availing himself of those improvements, which the progress of pathology has suggested since the days of Cullen, studied to render his work as complete as possible. In arranging and defining the diseases of the lungs, heart, and great vessels, he adopts most of the distinctions established by the research of Corvisart and Laennec. In those of the œsophagus, stomach, and bowels, he introduces some useful distinctions from the writings of Dr Monro *tertius.* The several forms of hernia are distinguished according to their anatomical differences, as established by Scarpa, Cooper, A. Burns, Key, and Laurence. In the diseases of the skin, a very meagre and imperfect department in the synopsis of Cullen, he introduces the system of Willan and Bateman, and by the accuracy of distinctions and neatness of definition, renders this elegant method of arrangement still more useful to the student. On the subject of tumours he adopts the arrangement of Abernethy, and observes such distinctions in anatomical and sensible characters as the observation of the best authorities recommends. Throughout his whole arrangement, in short, Dr Hawley has been at much pains to introduce every thing nosologically or pathologically useful, so far as the limits of his work admit.

His method of defining individual diseases, which is pretty nearly uniform throughout, is well calculated to attain the object in view. He first gives a definition, consisting of a short but clear enumeration of the principal essential characters of each disease. If these characters can be derived from symptoms, the author adopts them, and makes the definition at the same time a semeiographic description, while he adds invariably as a proximate or constituent cause (*causa continens*) the pathological process on which the disease is known to depend. This is the most usual method. In other instances, for example in the case of distinct organic diseases, the definition is necessarily derived from the anatomical characters of the organic change. After defining the disease, therefore, on this principle, the author proceeds in general to give a short but clear account of its principal symptoms, and occasionally a notice of the necroscopic changes. Such is the method observed in the definition of aneurism, inflammation of veins, and similar disorders. In the case of diseases in which the pathological cause is not perfectly ascertained, Dr Hawley generally annexes a few judicious remarks on the most plausible opinions on the subject. Of this the reader will see examples in *angina pectoris*, *diabetes*, cholera, scurvy, and some other maladies equally obscure in their nature. In all his definitions and remarks, Dr Hawley studies precision, and is anxious to avoid loading the memory of the student with a multitude of ideas and words which convey little satisfactory information.

The second part of the work as an abstract of toxicology is perhaps still more valuable. Admitting that no method of arrangement hitherto proposed is or can be entirely faultless, Dr Hawley thinks that the least objectionable is that derived from the mode of causing death; in other words, we imagine from the physiological effects of the poisonous agent. Upon this principle he distributes all known poisons in six orders, corrosive, astringent, acrid, narcotic, animal, and gaseous. It is easy to see that the two latter members of this arrangement do not exactly come under the principle of division, and in both must be included poisonous agents which differ very widely in the mode of operation. In reply to this, however, it may be justly said that the nature of the subject renders it much easier to detect faults than to amend them; and on this ground, the arrangement proposed by Dr Hawley may answer the purpose sufficiently well.

The descriptions of the individual poisons, of their mode of operating, and their effects upon the animal body, the methods of detecting their presence, and the account of the antidotes, are drawn up in a very neat and perspicuous manner. The information is generally derived from the most recent and most respectable authorities; and from the manner in which Dr Hawley speaks, it is manifest that it is a subject upon which he has exercised much study and reflection.

We regret that our limits do not permit us to enter more in detail into the merits of this performance. We shall only say in conclusion, that for neatness, sententious brevity, and perspicuity, as well as for the information which it furnishes, it well merits the attention of the student.

PART III.

MEDICAL INTELLIGENCE.

Report of the Select Committee appointed by the House of Commons to inquire into the Manner of obtaining Subjects for Dissection in the Schools of Anatomy, and into the State of the Law affecting the Persons employed in obtaining or dissecting Bodies.—The peculiar nature of the subject which the Committee were appointed to investigate, has induced them to inquire principally into the practice of the anatomical schools of London, where, by personal communication with the most eminent surgeons, and with the students and principal teachers of anatomy, it could be fully ascertained that no detriment to their interests was to be apprehended from the publicity to arise out of the present inquiry. With regard to the practice of the provincial schools, to avoid the expense of summoning witnesses from a distance, they have been satisfied with written communications from resident professors or practitioners of eminence, which will be found in the Appendix.

The Committee have inquired into the nature of the difficulties which the anatomists have here to contend with, whether arising out of the state of the law or an adverse feeling on the part of the people; and into the evil consequences thence ensuing, as well to the sciences of medicine and surgery as to all who study, teach, and practise them, and eventually to the members of the whole community. They have called witnesses to show in what manner the wants of the anatomist are provided for in several foreign schools, and to state their opinion whether similar methods could be applied with advantage in this country, and if applied would be adequate to remove the present difficulties.

The first origin of these difficulties is obviously to be traced to that natural feeling which leads men to treat with reverence the remains of the dead; and the same feeling has prompted them, in almost all times and countries, to regard with repugnance and to persecute anatomy.

As the importance of the science to the well-being of mankind was discovered, the governments of different states became its protectors, and in this country particularly, by the statute of Henry VIII., protection to a certain extent was given and intended to be given to it; but that protection, which at first perhaps was fully adequate, owing to the rapid progress of the science, has long since become wholly insufficient.

How limited were the wants of the science in the former part of the last century may be learned from the lectures of Dr William Hunter, who describes the professors of the most celebrated schools, both at home and abroad, as employing in each course of lectures not more than one, or at most two subjects, and as exhibiting the performance of the operations of surgery, not on human bodies, but on those of animals. He represents the students in medicine and surgery as never exercising themselves in the practice of dissection, because for such practice they had no opportunities.

For such a system of instruction the provisions of the statute of Henry VIII. might well be adequate, and these provisions, indeed, may now be considered of importance only as a distinct admission of the principle, that the government of this country ought to protect anatomy. The reformation of this antiquated and imperfect system took place in this country in the year 1746, when Dr William Hunter, having a singular enthusiasm for the science, established complete courses of anatomical lectures, and opened a regular school for dissection. The reform thus introduced was complete, and its author exulted before his death in having raised and diffused such a spirit for dissection, that he should leave behind him many better anatomists than himself.

Under his immediate pupils and their successors this school has gone on increasing. The earliest account that the Committee have met with of the number of anatomical students resorting to London is that given by Mr Abernethy, who states that shortly after the breaking out of the war with France they amounted to 200. One of the witnesses, Dr Macartney, computes their number in the year 1798 at 300; and Mr Brookes, a teacher of anatomy, in a calculation submitted to Sir Astley Cooper in the year 1823, then reckoned their number to be 1000. It appears from the returns now furnished by the teachers of the different schools in London, that their number at present is somewhat above 800; the diminution in the number since the year 1823 being the consequence, probably, of the pupils resorting to foreign schools, the advantages of which were less known at the former period than they are at present.

When it is considered what a demand there is for practitioners, as well to meet the wants of an increased population at home as of an extended empire of colonies and dependencies abroad, this rapid increase of students will not appear surprising; and if it is considered also that not only is that demand an increasing one, but that every practitioner, however humble, from that laudable desire for intellectual improvement which characterises the present age, endeavours, if he can afford it, to obtain a good education, and must regard himself as ill educated if he has not gone through a course of dissection, the eventual increase of dissecting students can hardly be calculated, should their wants be supplied abundantly and at a cheap rate.

Although the students now attending the schools of anatomy in London exceed 800, not more than 500 of this number actually dissect. The duration of their studies in London is usually sixteen months, and during that time the number of subjects with which every student in surgery ought to be supplied appears from the evidence (although there is some difference on this point) to be no less than three; two being required for learning the structure of the parts of the body, and one the mode of operating. The total number of subjects actually dissected in the schools of London in one year is stated to be not greater than from 450 to 500, which is after the rate of less than one subject for each dissecting student; a proportion wholly insufficient for the purposes of complete education.

Dissection on an extended scale began in this country before there existed any such general feeling in its favour, founded on an opinion of its utility, that the British government, after the example of some foreign governments, would venture openly to patronize it. Accordingly, when in 1763 Dr Hunter proposed to build an anatomical theatre, and to endow it with his museum and a salary for a professor, provided the government would grant him a site of ground for the institution, and his late Majesty would extend to it his countenance and protection, he met with a silent refusal. It was therefore only by stealth and by means not recognized by the law, that the teacher was enabled to procure subjects. These means, it is notorious, from the time of Dr Hunter down to the present time, have been principally disinterment; though of late other illegal modes and contrivances, such as stealing before burial, personation of relatives for the purpose of claiming bodies, &c. have occasionally been had recourse to. For some time after the first establishment of dissecting schools, while the number of teachers and students was small and the demand for subjects very limited, the means which were resorted to for obtaining a supply were adequate to the wants of the students, and bodies were obtained in abundance and cheaply. The exhumators at that time were few, and circumspect in their proceedings; detection was rare, the offence was little noticed by the public, and was scarcely regarded as penal; so that (according to one of the witnesses) long after the decision of the judges in 1788, that disinterment was a misdemeanour, prosecutions for this offence were not common, and offenders taken in the fact were usually liberated. If this state of things had continued, though the illegality of the practices had recourse to must be conceded, yet they could scarcely be said to occasion evils of such magnitude as to require a legislative remedy. But the number of students and teachers having greatly increased, and with them the demand for subjects and the number of exhumators, detections became frequent, the practice of exhumation notorious, and public odium and vigilance were directed strongly against the offenders. It may be collected from the debates in Parliament which took place in the year 1796, during the progress of a bill for subjecting to dissection the bodies of felons executed for burglary and robbery, that even at that time the public regarded disinterment with strong feelings of jealousy.

In proportion as the public became vigilant, the laws relating to sepulture were interpreted and executed with increasing rigour; and as the price of subjects rose with the difficulty of obtaining them, the premium for breaking the laws increased with the penalty. The exhumators increased in number, and being now treated as criminals, became of a more desperate and degraded character.

The parties of daring men who now took to raising bodies, did it happen (as was frequently the case) that, while in pursuit of the same spoil, they fell in one with another, actuated by vindictive feeling, and regardless of the caution and secrecy on which the successful continuance of their hazardous occupation must depend, had contests in the places of sepulture, left the graves open to public gaze, or gave information to magistrates, or the relatives of the disinterred, against their rivals. Frequently, with a view to raise the price of subjects, to extort money, or to destroy rivalry, they have proceeded to acts of outrageous violence, tending to excite the populace against the teachers of anatomy. These, and similar acts of violence or imprudence, have been constantly bringing exhumation to light, and have exasperated the public against both the exhumator and the anatomist; and this to such a degree, that of late, in many cases, individuals, out of solicitude to guard the dead, have taken upon themselves to dispense with the laws of their country, and have fired upon parties attempting disinterment. Other circumstances, but of minor importance, have been assigned by some of the witnesses as augmenting the difficulty of obtaining subjects in London, or increasing the demand for them; but as regards them, the Committee beg leave to refer to the evidence itself. The general result has been, with some difference, according to differences of place and season (sometimes owing to the caprice and mercenary motives of the agents employed, at other times owing to the real difficulty of obtaining a supply), that of late subjects have been to be procured either not at all, or in very insufficient quantity, and at prices most oppressive to the teacher and student.

The price of a subject about thirty years ago was from one to two guineas; the teacher now pays from eight to ten guineas; and the price has risen even to sixteen guineas. The teachers deliver subjects to their dissecting pupils at a lower price than that at which they purchase them, having been compelled to resort to this expedient lest dissection in London should be abandoned altogether. The loss which they sustain is made good out of the fees which they receive for attendance on their lectures in the anatomical theatre. The cost of providing subjects is also enhanced to the teacher by his being required occasionally to defend the exhumator against legal prosecution, and to maintain him against want, if sentenced to imprisonment, and his family, in case he has one, until the period of his punishment expires.

Nor is it only of a precarious, insufficient, and expensive mode of obtaining subjects that the cultivators of anatomy complain—it is by the law, not as regards the exhumators, but as it affects themselves, that they are aggrieved.

The first reported case of a trial for disinterment is that of Rex *v.* Lynn, in the year 1788, when the Court of King's Bench, on a motion for an arrest of judgment, decided it to be a misdemeanour to carry away a dead body from a church-yard, although for the purpose of dissection, as being an offence *contra bonos mores* and common decency. In this state the law on the subject of disinterment, as interpreted by the Court of King's Bench, appears to have remained until the present year; when Davies and another were tried and convicted at the assizes at Lancaster, and subsequently received the sentence of the Court sitting at Westminster, for having taken into their possession, with intent to dissect, a dead body, at the time knowing the same to have been unlawfully disinterred. A respectable teacher of anatomy, residing at Liverpool, had been tried and found guilty on a similar indictment at the quarter sessions at Kirkdale, in the month of February in the same year. With these exceptions, magistrates appear hitherto to have taken no cognizance of receiving into possession a dead body, unless there were strict evidence that the receiver was a party to the disinterment; and on this practical view of the state of the law professional men also appear hitherto to have acted. At present, however, a most intelligent magistrate, one of the witnesses, considers that very slight evidence would connect the receiver with the disinterment; and that the purchase from the exhumator would suffice to send the case to a jury, the knowledge of the fact of disinterment being to be collected from the circumstances, if strong enough to justify the inference. It is stated that there is scarcely a student or teacher of anatomy in

England who under the law, if truly thus interpreted, is not indictable for a misdemeanour.

According to the opinion of the last-cited witness, to be a party to the non-interment as well as to the disinterment of a dead body, would render a person indictable for a misdemeanour. Two cases are cited in support of this opinion. In the one, Rex *v.* Young, a non-reported case, but referred to by the court in the case of Rex *v.* Lynn, the master of a workhouse, a surgeon, and another person, were indicted for and convicted of a conspiracy to prevent the burial of a person who had died in the workhouse. In the other, Rex *v.* Cundick, which occurred at the Surrey spring assizes in the year 1822, the defendant was found guilty on an indictment for a misdemeanour, charging him with not having buried the body of an executed felon entrusted to him by the gaoler of the county for that purpose; but with having sold the body for lucre and gain, and for the purpose of being dissected; and on this trial it was not considered necessary to prove that the body had been sold for lucre or for the purpose of dissection. The witness infers, from the analogy of all these cases, that to treat a dead body as liable to any thing but funeral rites, is an offence *contra bonos mores*, and therefore a misdemeanour.

This state of the law is injurious to students, teachers, and practitioners, in every department of medical and surgical science, and appears to the Committee to be highly prejudicial to the public interests also.

It is the duty of the student to obtain, before entering into practice, the most perfect knowledge he is able of his profession, and for that purpose to study thoroughly the structure and functions of the human body, in which study he can only succeed by frequent and repeated dissection. But his wants cannot adequately be supplied in this country, except at an expense amounting nearly to a prohibition, which can be afforded only by the most wealthy, and precludes many students from dissecting altogether. From the precariousness or insufficiency of the supply, the dissections and lectures are often suspended for many weeks, during which the pupils are exposed to the danger of acquiring habits of dissipation and indolence; and, from the same causes, that important part of surgical education is usually omitted, which consists in teaching how to perform on the dead body those operations which the student may afterwards be required to practise on the living. But not only does the student find dissection expensive and difficult of attainment, but he cannot practise it, without either committing an infringement of the law himself, or taking advantage of one committed by others. In the former case he must expose himself to imminent hazard, and in either he may incur severe penalties, and be exposed to public obloquy. The law, through the medium of the authorities entrusted with conferring diplomas, and of the boards deputed by them to examine candidates for public service, requires satisfactory proof of proficiency in anatomical science, although there are no means of acquiring that proficiency without committing daily offences against the law. The illegality and the difficulties attending the acquisition of the science dispose the examiners in some cases to relax the strictness of their examination, and induce them, in the case of the Apothecaries' Company, to dispense with dissection altogether; the persons to whom certificates are granted by the examiners of this Company being these who, from their numbers [*] and extensive practice, ought especially, for the safety of the public, to be well instructed. The annual number of certificates so granted exceeds 400.

The teacher of anatomy, besides the evils which befal him in common with the student, has to suffer others, arising also out of the state of the law, which affect him with peculiar hardship. The obstacles which impede the study of anatomy in this country are such, and the facilities presented to the study in foreign countries are so great, that those English students who are desirous of obtaining a thorough knowledge of the science desert the schools at home, and repair to those abroad. Their principal resort is to Paris, where 200 English students of anatomy are now pursuing their course of instruction. Dissection probably, under these circumstances, would scarcely be followed at home, were it not for the regulations of the College of Surgeons, which require the candidates for the diploma of the college to have learned the practice of surgery in a recognized school within the united kingdom; so that the student, during the period required for learning this practice, in order that he may the sooner become qualified for his profession, employs a part of his time in learning also to dissect. These disadvantages affecting the teacher are such, that, except in the most frequented schools attached to the greater hospitals, few have been able to continue teaching with profit, and some private teachers have been compelled to give up their schools. To the evils enumerated it may be added, that it is distressing to men of good education and character to be compelled to resort, for their means of teaching, to a constant infraction of the laws of their country, and to be made dependent, for their professional existence, on the mercenary caprices of the most abandoned class in the community.

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[*] Computed at 10,000 in England and Wales.

But it is not only to the student, while learning the rudiments of the science, and to the teacher, while endeavouring to improve it, that dissection is necessary, and the operation of the law injurious. It is essential also to the practitioner, that during the whole course of his professional career he should dissect, in order to keep up his stock of knowledge, and to practise frequently on the dead subject, lest, by venturing to do so unskilfully on the living, he expose his patients to imminent peril. He is required also, in many important cases, civil and criminal, to guide the judgment of judges and of jurors, and would be rebuked were he to confess, upon any such occasion, that, from having neglected the practise of dissection, he was unable to throw light upon a point at issue in that science which he professed. He is liable, in a civil action, to damages for errors in practice, due to professional ignorance; though at the same time he may be visited with penalties as a criminal, for endeavouring to take the only means of obtaining professional knowledge.

Under these circumstances, affecting equally the student, teacher, and practitioner, the Committee were not surprised to find that this inquiry excited considerable interest in all parts of the country, and that numerous petitions from all classes of the profession, connected with the science of anatomy, were laid upon the table of the House, uniformly praying for an amendment of the existing law on the subject.

But independently of the bearings of the question on the interests of medical practitioners, and on the health of the community, the system pursued is productive of great evil, by training up a race of men in habits eminently calculated to debase them, and to prepare them for the commission of violent and daring offences. The number of persons who in London regularly live by raising bodies is stated by the two police officers examined before the Committee not to exceed ten; but the number of persons occasionally employed in the same occupation is stated by the same witnesses to be nearly 200. Nearly the whole of these individuals, as is admitted by the exhumators themselves who were examined before the Committee, are occupied also in thieving, and form the most desperate and abandoned class of the community. If, with a view to favour anatomy, exhumation should be allowed to continue, it appears almost a necessary consequence that thieves also should be tolerated. It should seem useless, however, with a view to suppress exhumation, to endeavour to execute the existing laws with increased severity, or to enact new and more rigorous ones. The effect of interpreting and executing the laws with increasing rigour has been, not to suppress exhumation, but to raise the price of bodies, and to increase the number of exhumators. So long as there is no legalized mode of supplying the dissecting schools, so long the practice of disinterment will continue; but if other measures were devised, which would legalize and insure a regular, plentiful, and cheap supply, the practice of disinterring bodies, and of receiving them, would of necessity be entirely abandoned.

Before adverting to those new methods for obtaining an adequate supply of subjects which have been suggested by the witnesses who have been examined before the Committee, they will state in what manner, according to the evidence adduced, the schools of anatomy at Paris are provided. They have also inquired into the practice of some other foreign schools, for an account of which they beg to refer to the evidence itself; and they dwell upon the practice of the schools of Paris, because it approaches most nearly to the plan recommended by most of the witnesses for adoption in this country.

The administration of all the hospitals at Paris, since the period of the Revolution, has been confided to a public board of management. The rule at the hospitals is, that every patient who dies shall be attended by a priest, and that, after the performance of the usual ceremonies of the Catholic church, the body shall be removed from the chapel attached to the hospital to the dead room, and there remain for twenty-four hours, if not sooner claimed by the relatives. Bodies may be examined after death, by the medical officers attached to a hospital, in order to ascertain the cause of death; but may not be dissected by them. A body, if claimed by the friends after examination, is sewed up in a clean cloth before being delivered to them. If not claimed within twenty-four hours after death, after being enveloped in a cloth in a similar manner, it is sent, in the manner hereafter described, to one of the dissecting schools.

There are no private dissecting schools at Paris, but two public ones; that of the Ecole de la Medecine, and that adjoining the Hôpital de la Pitié. These are supplied exclusively from the different hospitals, and from the institutions for maintaining paupers, the supply from certain of these establishments being appropriated to one school, and that from the remaining establishments to the other.

The distribution of subjects to the two schools is confided to a public officer, the Chêf des travaux Anatomiques. He causes them to be conveyed from the hospitals at an early hour in a covered carriage, so constructed as not to attract notice, to a building at the schools set apart for that purpose. They are then distributed by the prosecteurs to the students; and after dissection, being again enveloped in cloth, are conveyed to the nearest place of interment.

The students at the Ecole de la Medecine consist of young men who have distinguished themselves at a public examination, though the person at the head of the establishment is also allowed to admit pupils to dissect. The school of La Pitié is open to students of all nations, who on entering themselves may be supplied with as many subjects as they require, at a price varying, according to the state in which the body is, from three to twelve francs; priority of choice, however, being given to the élèves internes of the different hospitals, and the subjects being delivered to them at a reduced price. English surgeons were here permitted, until lately, to engage private rooms for the purpose of lecturing on anatomy to students of their own nation, and to superintend their labours in the dissecting room. From the protection and facilities which have thus been afforded to the study of anatomy at Paris, it has become the resort of the medical students of all nations; the practice of exhumation is wholly unknown, and the feelings of the people appear not to be violated.

It is the opinion of almost all the witnesses, that the adoption in this country of a plan similar in most respects to that which prevails in France, would afford a simple and adequate remedy for the existing evils. They recommend that the bodies of those who during life have been maintained at the public charge, and who die in workhouses, hospitals, and other charitable institutions, should, if not claimed by next of kin within a certain time after death, be given up under proper regulations to the anatomist; and some of the witnesses would extend the same rule to the unclaimed bodies of those who die in prisons, penitentiaries, and other places of confinement. In the hospitals which supply subjects to the anatomical schools of France and Italy, religious rites are paid to the dead before giving up the bodies for dissection: in the plan proposed for this country, most of the witnesses recommend that the performance of religious rites should be deferred until after dissection, and they are anxious that the anatomist should be required, under adequate securities, or a system of effective superintendence, to cause to be administered, at his own expence, to the bodies which he dissects, religious solemnities and the usual rites of burial.

The plan proposed has this essential circumstance to recommend it,—that provided it were carried into effect, it would yield a supply of subjects that, in London at least, would be adequate to the wants of the anatomist. The number of anatomical students resorting annually to London, and the number of subjects with which they ought to be supplied, have been already stated. It appears from the returns obtained by the Committee from 127 of the parishes situate in London, Westminster, and Southwark, or their immediate vicinity, that out of 3744 persons who died in the workhouses of these parishes in the year 1827, 3103 were buried at the parish expence; and that of these, about 1108 were not attended to their graves by any relations. There are many parishes in and around London from which at the time of making this Report returns had not been delivered in; but it may be inferred from those returns which have been procured, that the supply to be obtained from this source alone, would be many times greater than that now obtained by disinterment; that when added to the supply to be derived from those other sources which have been pointed out, it would be more than commensurate to the wants of the student, and consequently, that the plan, if adopted, as meeting the exigencies of the case, would eventually be the means of suppressing the practice of exhumation.

If it be an object deeply interesting to the feelings of the community that the remains of friends and relations should rest undisturbed, that object can only be effected by giving up for dissection a certain portion of the whole, in order to preserve the remainder from disturbance. Exhumation is condemned as seizing its objects indiscriminately—as, in consequence, exciting apprehensions in the minds of the whole community—and as outraging in the highest degree when discovered, the feelings of relations. If selection then be necessary, what bodies ought to be selected but the bodies of those who have either no known relations whose feelings would be outraged, or such only as by not claiming the body would evince indifference on the subject of dissection? It may be argued, perhaps, that the principle of selection, according to the plan proposed, is not just, as it would not affect equally all classes of the public; since the bodies to be chosen would, necessarily, be those of the poor only. To this it may be replied—1st, that even were the force of this objection to a certain degree admitted, yet that, to judge fairly of the plan, its inconveniences must be compared with those of the existing system; which system, according to the evidence adduced, is liable in a great measure to the same objection, since the bodies exhumated are principally those of the poor; 2dly, that the evils of this, or of any other plan to be proposed on this subject, must be judged of by the distress which it would occasion to the feelings of surviving relations, and the unfairness to one or another class of the community, by the degree of distress inflicted on one class rather than another; but where there are no relations to suffer distress, there can be no inequality of suffering, and, consequently, no unfairness shown to one class more than another.

One or two of the witnesses, who appear to be either favourable, or not opposed to the principle of the plan, speak with doubt of its success, as though it would be found impracticable to reconcile the public to its introduction; and one, in particular, apprehends that religious feelings may impede its adoption. An objection founded on religious feelings does not apply to the plan in question only, but would be equally valid, generally, against all dissection whatsoever; and should lead those who urge it, consistently with their own principles, to endeavour to put down altogether the study of practical anatomy.

Though it may be true that the public are to a certain degree averse to dissection, yet it is satisfactory to find several of the witnesses adducing facts to prove that those feelings of aversion are on the decline. They state that in those parish infirmaries where the bodies of those who die are examined, as the practice has become common, it has been viewed with less jealousy: that in those hospitals where a similar rule prevails, neither patients themselves are deterred from applying for admission, nor their relatives on their behalf: that the addition of public dissecting rooms to hospitals has not produced any diminution in the number of applications for relief within the walls of those hospitals; and that, by reasoning with the friends of those who die, and by explaining to them how important it is to the art of healing that examination should take place after death, they may usually be brought to consent to the bodies of their friends being examined. Hence it is argued, that in involving the subject of dissection in mystery, as has hitherto been the case, the public have been treated injudiciously; that with proper precautions, and the light of public discussion to guide them, they may be made to perceive the importance of the study generally, and the reasonableness of the particular measure now contemplated, and that when they come to regard it as the means of suppressing exhumation, they will receive it with favour, and finally acquiesce in it.

The legislative measures which most of the witnesses are desirous of, in order to enable them to carry the plan into effect, is the repeal of any existing law, which would subject to penalties those who might be concerned in carrying the proposed plan into execution: they wish for an enactment, permissive and not mandatory, declaring that it shall not be deemed illegal for the governors of workhouses, &c. and for anatomists, the former to dispose of, the latter to receive and to dissect, the bodies of those dying in such workhouses, &c. such bodies not having been claimed, within a time to be specified, by any immediate relations, and due provision being made for the invariable performance of funeral rites. Some few of the witnesses, indeed, who state that they wish for the success of the plan, contemplate any legislative interference whatever in this matter with apprehension; but they do not appear to have been aware how nearly the cases decided by the courts of law, and already adverted to, would apply to persons engaged in executing the plan in question. In those cases the bodies, for the non-burying of which the defendants were severally convicted, were those of a pauper who died in a workhouse, and of a person who suffered death as a felon. If these cases apply, as it appears they do, to persons engaged in giving up or in receiving, for other purposes than for burial, the bodies of the inmates of workhouses or of prisons, such impediments to the success of the plan cannot be removed, as these witnesses think they might be, simply by the favourable interference of the executive government, however disposed to show indulgence to the profession; but an act of the legislature can alone provide a remedy.

Amongst the measures that have been suggested for lessening the dislike of the public to dissection, is that of repealing the clause of the act of Geo. II. which directs that the bodies of murderers shall be given up to be anatomized. It appears from the returns already laid before the house, that, as regards the direct operation of this clause, on the supply of subjects, the number which it yields to the anatomist is so small in comparison of his total wants, that the inconvenience which he would sustain from its repeal would be wholly unimportant. As to its remote operation, almost the whole of the witnesses examined before the committee, and of those whose written communications will be found in the appendix, are of opinion that the clause in question, by attaching to dissection the mark of ignominy, increases the dislike of the public to anatomy, and they therefore are desirous that the clause should be repealed.

The Committee would be very unwilling to interfere with any penal enactment which might have, or seem to have, a tendency to prevent the commission of atrocious crimes; but as it may be reasonably doubted whether the dread of dissection can be reckoned amongst the obstacles to the perpetration of such crimes, and as it is manifest that the clause in question must create a strong and mischievous prejudice against the practice of anatomy, the Committee think themselves justified in concluding, that more evil than good results from its continuance.

The Committee consider that they would imperfectly discharge their duties if they did not state their conviction of the importance to the public interests of the subject of their inquiries. As the members of the profession are well educated, so is their ability increased to remove or alleviate human suffering. As the science of anatomy has improved, many operations formerly thought necessary have been altogether dispensed with; most of those retained have been rendered more simple, and many new ones have been performed, to the saving of the lives of patients which were formerly thought impossible. To neglect the practice of dissection would lead to the greatest aggravation of human misery; since anatomy, if not learned by that practice, must be learned by mangling the living. Though all classes are deeply interested in affording protection to the study of anatomy, yet the poor and middle classes are the most so; they will be the most benefited by promoting it, and the principal sufferers by discouraging it. The rich, when they require professional assistance, can afford to employ those who have acquired the reputation of practising successfully. It is on the poor that the inexperienced commence their practice, and it is to the poor that the practice of the lower order of practitioners is confined. It is, therefore, for the interest of the poor especially, that professional education should be rendered cheap and of easy attainment; that the lowest order of practitioners (which is the most numerous,) and the students on their first entry into practice, may be found well instructed in the duties of their profession.

Such, on an attentive consideration of the evidence adduced, is the deliberate judgment of the Committee on the matters submitted to them; and it now remains for the house to consider whether it will not be expedient to introduce, in the course of the ensuing session, some legislative measure which may give effect to the recommendations contained in the present Report.—July 22, 1828.

[This interesting and masterly report, with the evidence which accompanies it, will probably be made the subject of review in our next number. There is one statement, however, contained in the evidence of Mr G. S. Patison, which it is material to correct at present. This gentleman, who professes to be well acquainted with the state of practical anatomy at the Scottish schools, has stated that "*they are now in a most deplorable state; it is now quite impossible to procure above two or three bodies in the course of a year by exhumation, and the plan that has been adopted, is to salt those bodies and dry them.*" There is not a vestige of a pretext for this rash allegation. The number of bodies used in Edinburgh alone last season is proved by the report of the College of Surgeons to have been 150, and the supply appears to have been proportionally as complete as in London.—EDITORS.]

Analysis of the mineral waters of Scotland. [*Glasgow Medical Journal, May* 1828.] In our April number we gave an abstract from the Glasgow Medical Journal, of Dr Thomson's account of the composition of the chief saline mineral waters of Scotland. The following is a similar abstract of the continuation of Dr Thomson's labours on the Scottish sulphureous and chalybeate springs.

TWO SULPHUREOUS waters have acquired celebrity, *Moffat* and *Strathpeffer*, the former in Dumfries-shire, the latter in Ross-shire. Moffat has been long known by the profession and resorted to as a watering place. Its situation, says Dr Thomson, is rather beautiful, owing to the contrast between the bleak mountains in the back ground, and the finely wooded irregular land in the vicinity of the village; but the country at a greater distance is flat and uninteresting. The hills near it are composed chiefly of grey-wacke-slate and transition greenstone; and although Dr Thomson could not discover any alum-slate, it appears probable that the sulphureous spring is connected with that rock. The Professor has taken notice of a chemical analysis of this water as early as 1659, another by a Mr Milligan, a surgeon of Moffat, in 1746, and a third about thirty years ago, published in Dr Garnett's Tour through Scotland. It has been chiefly celebrated as a remedy in scrofulous diseases. According to Dr Thomson's analysis the composition of an imperial gallon is

Sulphuretted hydrogen gas, -	21.290 cubic inches.
Common salt, -	176.569 grains.
Sulphate of soda, -	16.562
Sulphate of lime, -	11.579
Sulphate of magnesia, -	5.474
Solid contents, - -	210.184
Spec. gravity, - -	1.00255

The *Strathpeffer* springs are two in number, situate in a valley of the same name, not far from Dingwall in Ross-shire. For the following account of them, which differs in several respects from that of Dr Thomson, we are indebted to the kindness of Sir George Mackenzie, whose property is in the immediate neighbourhood.

The valley in which the springs lie is about twenty-five miles from the open ocean. The country around is rich and romantic, and not far from some of the highest Highland mountains, among which Ben-Wevis is the most conspicuous. The roads are excellent; and the climate is much the same as that of Edinburgh, but with less of its bitter easterly winds. The prevailing rock of the district is the new red sandstone, but this is not the rock from which, as Dr Thomson says, the springs have their source. It resembles dark bituminous limestone when fresh, exhales the odour of stinkstone when broken or rubbed, and by weathering falls rapidly into a loose clay. It has not yet been carefully analyzed, but seems to contain carbonate of magnesia in large proportion. Dr Thomson has fallen into error in stating the temperature of the springs at 39° and 39$\frac{3}{4}$°. According to Sir George Mackenzie's observations made while the air was at 55°, the temperature of both springs, which are under cover, is 44°, or about the mean temperature of the latitude.

The virtues of the Strathpeffer waters have been long known all over the north of Scotland, and in 1772 Dr D. Monro published an imperfect analysis of them in the Philosophical Transactions. But the better classes did not much resort to them till they were brought into notice by the enthusiastic commendations of Dr Morrison of Elsick, an Aberdeenshire physician. Dr Morrison, having tried them successfully on himself, not only recommended them strenuously to all his friends, but also prevailed on the proprietor to erect a pump-room at one of the springs, and built himself a cottage in the immediate vicinity, where he fixed his residence and continued to drink copiously of his favourite beverage till the very day of his death. Since then Strathpeffer has been less frequented, probably because there is no longer a resident practitioner to direct the visitors in the use of the water.

The water is powerfully diuretic, and also laxative, and it is taken of course for a great variety of complaints, among which chronic rheumatism, dyspepsia, and scrofula are predominant. On the first disease it certainly seems to have a beneficial effect. "I have known," says Sir George Mackenzie, "several individuals (afflicted with chronic rheumatism) who came to the Strath as stiff as pokers, walk about with ease in a few weeks." Dr Morrison committed an error in recommending the water to be drunk hot, and the mistake is still committed by many. If its virtues are owing to the sulphuretted hydrogen, part if not the whole of the gas will thus be expelled.

We may add that similar springs abound in the adjoining country. There are others at a village of the name of Muirtown, two miles south west from Strathpeffer, and Sir G. Mackenzie some years ago discovered another about fifteen miles north west, also in the red sandstone district.

The following is Dr Thomson's analysis of the two springs, made on specimens collected by himself in the summer of 1824. The quantity, as usual, is an imperial gallon.

	Upper Well.	Pump-room Well.
Sulphuretted hydrogen gas, -	26.167	13.659 cubic inches.
Sulphate of soda, -	67.770	52.710 grains.
Sulphate of lime, -	39.454	30.686
Common salt, -	*24.728	*19.233
Sulphate of magnesia, -	6.242	4.855
Solid contents, -	138.194	107.484
Spec. gravity, -	1.00193	1.00091

The pump-room has therefore been attached to the weaker spring. Since making this examination Dr Thomson has examined another sample of each spring collected by Mr Rainy, a surgeon of Glasgow; and found a larger quantity of sulphuretted hydrogen, namely, 30.791 cubic inches in the first, and 18.231 in the second,—a higher specific gravity, namely, 1.0022 and 1.0015,—not above half the quantity of saline contents, and not chloride of sodium, but chloride of potassium. He adds, that in his first analysis he omitted determining with the requisite care whether the base of the chloride was sodium or potassium, and that therefore the salt was probably chloride of potassium, in which case its proportion should stand in the two analyses above (*) 31.32 and 24.36 grains.

In the vicinity of Edinburgh there are many weak sulphureous waters which spring from rocks of the coal formation. But none of them are strong enough or fashionable enough for the purposes of water-drinkers. St Bernard's well, on the Water of Leith, was till lately held in considerable repute, and used to be much resorted to in the morning by the citizens of Edinburgh. But since the town began to surround it, and its neighbourhood ceased to be romantic and sequestered, Lord Gardenstone's temple and statue, which he erected there in honour of the goddess Hygeia, have ceased to possess their former attractions, and the spring its virtues.

Of the Chalybeate springs of Scotland Dr Thomson has examined with care only those of Moffat. Many others, however, have at different times been in repute, and that of Peterhead, which Dr Thomson has not yet had an opportunity of analyzing, is still much frequented. A chalybeate spring, we may add, in the immediate neighbourhood of this city, has very lately come into notice, is a good deal resorted to, and even sent to customers in town, and if it had happened to be situate at a greater distance, and in a neighbourhood somewhat more inviting than the banks of the muddy Water of Leith as it passes the great Bonnington distillery and flour-mills, the spring might have become a fashionable place of resort with water-drinkers. It has been examined with care by Dr E. Turner, who found that the iron is in the form of carbonate held in solution by free carbonic acid; that the water also contains sulphuric and muriatic acids in union with lime, magnesia, potass, and soda, but chiefly the last; and farther, that there is present a small quantity of *hydriodate* of potass. The presence of this salt was ascertained by evaporating a pint of the water to dryness, taking up the soluble part of the residue in a drachm or two of a weak solution of starch, quite cold, and adding a few drops of concentrated sulphuric acid, when the characteristic blue colour made its appearance.—(See *Edin. New Phil. Journal*, i. 159.)

Moffat possesses two good chalybeate springs, Hartfell Spa, a much more powerful chalybeate than any in England, containing six times as much oxide of iron as the Tunbridge water,—and another rising from a different part of the same mountain, but not yet dignified with a name. They both arise from Hartfell. The latter must spring from a decomposed alum-slate, as its composition is analogous to that of the liquid from which alum is manufactured. The former probably has a similar origin, though its composition is different. Hartfell Spa is quite transparent, free of smell, and has a sweetish astringent taste.[*] The other is reddish, and has a harsh acid chalybeate astringent taste, and reddens litmus. The following is the result of Dr Thomson's analysis of an imperial gallon of each.

---

[*] The water of this spring is colourless, and to our palate almost or altogether free of peculiar taste. The presence of iron is nevertheless easily proved by ferrocyanate of potass, or tincture of galls followed by a little carbonate of soda, as Dr Thomson has mentioned.—[Ed.]

Hartfell Spa.	
Protosulph. iron,	36.747 grains.
Muriate of lime,	33.098
Sulph. of alumina,	*a trace.*
Solid contents,	69.845
Spec. gravity,	1.0007

Second Spring.	
Persesquisulph. iron,	591.025
Sulphate of alumina,	112.726
Excess of sulphuric acid,	5.202
Solid contents,	708.953
Spec. gravity,	1.00965

Medical Graduations at Edinburgh.—On the 12th of July 1828, the Senatus Academicus of the University of Edinburgh conferred the degree of Doctor in Medicine on the following Gentlemen, in number ninety-three,* after having gone through the appointed examinations, and defended publicly their inaugural dissertations.

Of Scotland.

James E. Anderson, De Ictero.
William P. Andrew, — Asphyxia.
Robert Boyd, — Anatomia Morbida Ventriculi
David Burnie, — Hydrargyro.
William James Carson, — Depilatione Spontanea.
Patrick Charles, — Morbis qui simulant Phthisin veram
Alexander B. Chisholm, — Imperio quo Aer, Aquæ atque Loca valetudinem humanam regunt.
Alexander Turnbull Christie, — Membranæ Mucosæ Pathologia.
Robert Curror, — Bronchocele.
John Dalziel — Anasarca.
William Elliot, — Strictura in Instestino Recto.
Peter Gardner, — Phthisi Pulmonali.
William L. Gibson, — Hæmatemesi et Melæna.
William Gregory, — Principiis Vegetabilium Alkalinis.
Isaac Haig, — Cœlo in remedium Phthiseos optimo.
Robert Harvey, — Rheumatismo.
Walter Idington, — Ulceribus et Furunculis.
Alexander Laing, — Injuriis Capitis.
John Lucas, — Rubeola.
Agnew Mackintosh, — Hepatitide.
John C. M'Cartney, — Scorbuto.
George F. Maitland, — Cynanche Tracheali.
Richard Mein, — Ophthalmia.
John Menzies, — Prostata Tumida.
James Millar, — Cynanche Tracheali.
Gavin Milroy, — Causa proxima Inflammationis.
John Mitchell, — Delirio Trementi.
John Innes Allan Moir, — Febre Intermittente.
Charles Morehead, —Sputis quatenus ad Morbos Pectoris dignoscendum conferunt.
Alexander Murray, — Causa Febris Continuæ.
Robert Omond, — Cholera Britannica.
Thomas Rae, — Causo Remittenti qualis in Guaiana grassatur.
Robert Scott, — Hydrocephalo Acuto.
John Sproat, — Dysenteria.
John Stewart, — Ictero.
David Sturrock, — Cynanche Tracheali.
Fraser Thomson, — Arsenico.

Of England.

Charles Cooper Abbs, De Amaurosi.
Josias Allsop, — Inflammationis Natura.
Robert Arrowsmith, — Infanticidio.
John J. K. Burt, — Pathologia et Nomenclatura Morborum Corneæ.
James H. Dallas, — Vita.

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* As we have found some of our townsmen surprised at the small number of graduates compared with last year, it may be well to remind the reader, that the students of the University who commenced their studies in 1824–5, under the operation of the former *Statuta* were admissible as graduates in 1827, while those who commenced a year later, namely, in 1825–6, are, with a few exceptions, required by the present *Statuta* passed in the beginning of 1825, (see this Journal, xxiii. 421,) to study four sessions, and consequently, are not admissible as candidates for the degree till 1829, instead of 1828, as they would have been under the old regulations.

John Warren Edger, — Morbis propriis opificibus in Fodinis Carbonariis.
Newton Hanson, — Ictero.
Henry P. Harwood, — Pathologia Apoplexiæ.
Edward S. Haviland, — Variola et Vaccinia
Edward Anthony Hedley, — Embryotomia.
George Barber Huxtable, — Vi Animi in Corpus.
Robert Hamilton Irvine, — Pneumonia.
Thomas Robert Jefferson, — Dyspepsia.
William Lennard, — Obstipatione.
James Lilburn, — Erysipelate.
George Dixon Longstaff, — Calorico.
Charles Lowder — Inflammatione in Membranis Mucosis.
Joseph D. Milner, — Rheumatismo Acuto.
Patrick Mollison, — Stethoscopio.
John Nicholson, — Pathologia Cerebri.
Henry Ogden, — Absorptione.
William Ballard Seagram, — Quibusdam Cordis organicis Morbis.
Francis Snaith, — Rabie Contagiosa.
John Addington Symonds, — Variola.
John Thomson, — Febre Endemica Bataviæ.
Henry Yates Whytehead, — Hydrope.
John Wright, — Inflammatione uti se in diversis corporis texturis prodit varia.
Henry H. Webster. — Morbis Coxariis.

Of Wales.

Douglas Cohen, — Gangræna.
John Davis, — Hepatitide.

Of Ireland.

William Alton, — Epilepsia.
William Osborne Briscoe, — Delirio ex Ebriositate.
Henry Augustus Cæsar, — Hæmatemesi.
John B. Callan, — Pleuritide.
Robert Chermside, — Diabete.
Nicolas Colohan, — Hydrope Abdominis.
Daniel Donovan, — Asphyxia.
John Eccles, — Dysenteria.
Joshua Harvey, — Frigoris Effectibus.
Philip M‘Dermott, — Balneis Calidis.
William M‘Culloch, — Amaurosi.
William M‘Gee, — Indole Febris Flavæ non contagiosa.
John M‘Ilroy, — Dysenteria.
Robert M‘Kibbin, — Dyspepsia.
John M‘Mechan, — Hysteria.
Dionysius O‘Flaherty, — Hepatitide.
Matthew O‘Hea, — Dysenteria.
Henry Pentland, — Iritide.
John Sheridan, — Fluxu Hæmorrhoidali.
William Stewart, — Hydrocele.
William Thompson, — Cataracta.

From Jamaica.

Edward Binns, — Sudore Anglicano.
William H. Tharp, — Aneurismate.

From Barbadoes.

William Ifill, — Injuriis Capitis.

From America.

Henry Buist, — Cynanche Tracheali.

From Buenos Ayres.

Miguel Arestigui, — Calculorum Urinæ Formatione Curaque Medica.

Surgical Examinations at Edinburgh.—August 1, 1828.—Since August 1827 the following Gentlemen, one hundred and sixty-nine in number, have appeared before the Royal College of Surgeons of Edinburgh, and having produced certificates of their completing the course of study prescribed by the College, and having been admitted on examination, have been found fully qualified to practise the arts of Anatomy, Surgery, and Pharmacy, and have received Diplomas accordingly.

Of Sotland.

John Kennedy,
James O. M‘William,
George Marjoribanks,
John Sutherland,
James Miller,
James Rutherfoord,
John Mitchell Strachan,
George Alexander Munro,
William Laing Thomson,
Patrick Smith Fraser,
William Fergusson,
John Bannatyne M‘Donald,
Peter Mackintosh,
Andrew Anderson,
Alexander Stivens,
Alexander Stewart,
Thomas Smith,
Robert M‘Lean,
Thomas Lyon Morrison,
William Lockhart Gibson,
Alexander Crighton,
William Pirrie,
John M‘Kenzie,
William Patrick Andrew,
Robert Harvey,
Jonathan Forbes,

Duncan M‘Tavish,
John Currie,
John Miller,
John White.
Henry Dunlop,
Alexander Young,
David Morton,
James M‘Call Aitkin,
Patrick Robertson,
John Gibson,
James Bremner,
John Strauchon,
James Maitland Valence,
George Burn,
David Waters Sinclair,
Charles Dundas Ure,
James Williamson,
John Park Macartney,
Mungo Martin,
John Scott,
John Dalziel,
Nathaniel Davidson,
W. M‘Craken Grierson,
William Reid,
Patrick Brown,
John Irving,
John C. Hetherington,
William Alexander,
Thomas Smart Livingston,
Alexander Burn,
Andrew M‘Dowall Stuart,
James Blackwood,
Robert Dobie,
William C. Archibald,
Henry Alexander Bruce,
James Cornfoot,
Hugh Cheape,
James Henderson Rolland,
Alexander Anderson,
William Gibson,
James Robb,
Thomas Craig,
Matthew Baillie Gairdner,
David M‘Lellan,
James Pagan,
James Dorward,
Alexander F. T. Graham,
Duncan Grant,
James Grant,
Thomas M‘Gillivray,
Robert Valantine,
Thomas Wright,
Robert Curror,
John Thomson,
James Stiell,
John Brown,
Alexander Forrest,
John Menzies,
Leslie Sibbald,
Thomas W. P. Stoddart,
John Innes,
Alexander Tudhope,
Gregor Stewart,
Hugh Falconer,
Robert Mason,
James Moffat Cowan,
John Spence Login,
William Balfour Allan,
William Gilchrist,
Alex. M‘Come M‘Walter,
Thomas Smibert,
George David M‘Laren,
Robert M‘Lean,
Daniel Robertson,
James Robertson,
Henry M‘Farlan,
James Esdaile,
Colin Rogers,
Kenneth M‘Kenzie,
James Grieve,
John Wood,
Robert Boyd,
Basil Spence,
Thomas Frazer,
John Caw,
George M‘Doual,
Alexander M‘Donald.

From England.

Robert Hamilton Irvine,
Charles D. J. Lowder,
Henry King Armstrong,
George Scott,
Thomas Tweddle,
Thomas Taylor,
Josiah Allsop,
Thomas Alfred Barker,
William Rushton,
John Brown,
William Montague Tovey,
John Wing,
Henry Sill,
John Saddler,
William Henry Duncan,
Felix Yaniewicz,
Edward Anthony Hedley,
Charles Clark,
Edward Savage Haviland,
Samuel Malins,
James Henry Dallas,
Richard Baron Howard,
John Spence.
Peter Daly Murray,
Douglas Cohen,
Charles James Stevens,
John Berkely Harrison.

From Ireland.

George Davis,
Charles Æmilius Ross,
Eugene Henry Field,
Kenneth M‘Caskill,
John Wales,
John M‘Meehan,
John Myers Atkin,
Robert Chermside,
James Moffat Lindsay,
Robert Acton,
James Brown,
James Porter,
Timothy Moressy,
Patrick Walsh Mallon,
James Atchison,
Joseph Wallace Bryson,
John Boyle Bennet,
Richard Arthur Peason,
William M‘Culloch.

From Abroad.

William Campbell Smith,
Buchan Warren Wright,
Robert Innerarity,
Francis Badgely,
James Robertson,
John M‘Crae,
Adolphus John Harvey,
David Sloan,
James Edward Porteous,
John Anderson.

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END OF VOLUME THIRTIETH.

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